THE

CHIRURGICAL WORKS

OF

BENJAMIN GOOCH,

SURGEON;

A NEW EDITION,

WITH HIS LAST CORRECTIONS AND ADDITIONS.

IN THREE VOLUMES,

VOL. I.

CONTAINING

A PRACTICAL TREATISE ON WOUNDS AND OTHER CHIRURGICAL SUBJECTS.

To which is prefixed,

A SHORT HISTORICAL ACCOUNT OF THE RISE AND PROGRESS OF

SURGERY AND *ANATOMY*,

Addreſſed to Young Surgeons.

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MDCCXCII.

BRITISH MUSEUM

TO

YOUNG SURGEONS.

GENTLEMEN,

I OFFER theſe papers to you, from a deſire of being as uſeful as I can in my profeſſion. They are founded upon the lectures of the moſt eminent profeſſors, the practice of the hoſpitals, and the ableſt ſurgeons at home and abroad; and contain the ſentiments of the ancients and moderns: among which are interſperſed obſervations, practical remarks, and ſuch reflections as my own experience and diligent attention for full forty years, have furniſhed me with.

I will not doubt of your favourable acceptance of this *opuſculum*, nor of your can-

did interpretation of the quotations, which are made with a deſire of raiſing in your minds a ſpirit of emulation, and inciting you to conſult thoſe diſtinguiſhed writers I am indebted to, who will more amply reward your inquiries. —— When I was a young man I wiſhed for a plain, methodical guide upon this ſubject; and if what I have written ſhall afford you any aſſiſtance in your ſtudies and purſuits, my endeavours will be fully recompenſed.

By beginning early to make obſervations, taking minutes of extraordinary occurrences in practice, and making them occaſionally the ſubjects of reflection, you will receive great advantages. From ſuch rational experience, you may expect to acquire a requiſite degree of confidence in yourſelves, animating you to proceed in your buſineſs with proper reſolution and ſteadineſs, to accompliſh the ſeveral ends you may have in view.

Purſue, with zeal and perſeverance, the ſteps that lead to knowledge and underſtanding in your profeſſion, to ſupport the credit

credit and dignity of ſurgery, for your own honour and the public good; in which I wiſh you all imaginable ſucceſs, and am,

GENTLEMEN,

Your faithful and affectionate

Friend and Servant,

B. GOOCH.

NORWICH,
Jan. the 1ſt, 1766.

The following extracts are from the preface to an abridged tranſlation of the preliminary diſcourſe to the 1ſt vol. of the *Mem. de l'Acad. Roy. de Chirurgie*, printed in the year 1760, for *Wilſon* and *Durham*.

" Thoſe who intend bringing up their children in " ſurgery, ſhould give them as much preparatory edu- " cation, as if they deſigned them for the univerſity: " alſo the French tongue, the mathematics, eſpecially " mechanics, drawing, and ſtenography, if not abſo- " lutely neceſſary, are very uſeful accompliſhments for a " ſurgeon, and they certainly will be found ſo upon " many occaſions, in the purſuit of his ſtudies; a com- " petent knowledge of which may be eaſily obtained by " an early and proper application.

" Thoſe of a ſuitable genius and thus qualified, who " ſhall be put apprentices, even in the country, to able

 " and

" and inſtructive maſters, afterwards attending aſſidu-
" ouſly in *London* to anatomy, ſurgery, experimental phi-
" loſophy, &c. may become ornaments in their profeſ-
" ſion, and may be enabled, by theſe means, to expreſs
" and conduct themſelves in ſuch a manner, as will ef-
" fectually recommend them to the world, and ſupport
" the character and dignity of an art that has been highly
" honoured in all ages."

" As the ſymptoms of latent diſeaſes are often very
" equivocal, the diligent obſervance and minuting of
" them down before the death of the patient, and the
" accurate inſpection of the body after, might greatly
" improve the *diagnoſtic* and *prognoſtic* part of the medical
" art: and in proceſs of time, by theſe meaſures, perhaps
" better *criterions* might be eſtabliſhed to direct the judg-
" ment in the curative indications; or when it happens
" that the diſeaſe is incurable in its nature, it is not a
" little to the honour of the phyſician or ſurgeon to be
" able to preſage the event of it; yet opportunities of
" making remarks and obſervations, in this uſeful and
" inſtructive manner, can ſeldom be had but in hoſ-
" pitals."

That diſcourſe which was written by doctor *Queſnay*, an excellent French writer, has been much admired; and indeed I think it deſerves an attentive peruſal better than any thing I have ſeen upon the ſubject.

THE

THE

CONTENTS.

Page

THE introduction, containing the riſe and progreſs of ſurgery i

The riſe, progreſs, and preſent ſtate of anatomy xvii

Diviſion of this treatiſe, the definition and difference of wounds 57

Appearances of a ſimple wound through every ſtate, till it is perfectly healed 63

Of a wound in a ſmall artery 67

——————— *a large artery* 70

Of the different ſpecies of aneuriſms 78

Of

Page

Of wounds in the veins, lymphatics, glands, nerves, tendons, membranes, and ligaments 81

Of the prognoſis in wounds 88

Of mortal wounds 90

Of ſuch wounds as may prove mortal when left to themſelves, admitting of cure by proper treatment 113

The method of drawing prognoſtics in wounds 120

Of the different intentions in the cure of wounds, and how they are to be anſwered 124

Of bandages applicable to wounds 141

Of ſutures 145

Of curing wounds in the arteries 156

Of ſtyptics, fungous ſubſtances. &c. 160

Of the treatment of aneuriſms 175

Of the treatment of wounds of the veins, lymphatics, nerves, tendons, &c. 185

Of poiſoned wounds, venomous bites, &c. 195

Of

Page

Of the accidents belonging to wounds 198

Of the extraction of extraneous bodies 207

Of the non-naturals 219

PART II.

Page

Of wounds and other injuries incident to the head and encephalon 234

Of trepanning 298

Of fungosities apt to arise after trepanning, and the method of prevention 315

Of tumours on the head of new-born children 323

Of wounds of the forehead, face, neck, &c. 328

Of wounds of the thorax, *and its contents* 345

——————— abdomen, *and its contents* 375

——————— *parts in the* pelvis 418

Of

Page

Of wounds of the ſcrotum, teſtes, penis, &c. 426

———— extremities 434

Of the ſacculi mucoſi 437

Of gun-ſhot wounds 442

Of burns 449

The method of opening a dead body 451

Of embalming dead bodies 457

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THE

INTRODUCTION.

THE medical art is compriſed under theſe three general heads; *Phyſiology*, *Pathology* and *Therapeutics*, or the method of curing diſeaſes, conſiſting of diet, medicine, and manual operation; the latter of which is the province that falls peculiarly to the ſurgeon's ſhare.

Writers have divided Surgery into theſe ſix branches: *Syntheſis*; *Diæreſis*; *Exæreſis*; *Aphæreſis*; *Proſtheſis*; and *Diortheſis*: the firſt ſignifies uniting parts divided: the ſecond dividing parts united: the third removing or extracting extraneous or other noxious ſubſtances, lodged in any part of the body: the fourth taking away what is ſuperfluous: the fifth ſupplying deficiency: the ſixth reſtoring parts to their proper places.

The daily inſtances of the relief which ſurgery brings the afflicted, under the various circumſtances of diſtreſs, even delivering them from the jaws of death, ſufficiently proclaim it's excellence; and it appears to be of much earlier date, than the other parts of the medical art.

We ſee by the *antediluvian* hiſtory, that ſoon after the creation of the world, feuds and animoſities, envy and malice, poſſeſſed the minds of men, productive of rapine and war, which inevitably expoſed the contending parties to wounds, and other external injuries.—Reaſon, implanted in man for his preſervation, as the firſt principle in nature, directed him on various occaſions, to ſeek a remedy; and this neceſſity gave riſe to ſurgery, which at firſt was rude and imperfect, gradually growing, in ſucceſſive ages, like other ingenious arts and ſciences, to a ſtate of perfection.

The inhabitants of the earth, in the primitive ages of the world, lived frugally upon plain ſimple food, according to the dictates of nature and right reaſon; and, enjoying a pure ſerene air and temperate climate, their lives were protracted to a great length, without being ſo ſubject as we are to diſeaſes, which have been much increaſed ſince that time by luxury and intemperance. They were peculiarly happy in the enjoyment of robuſt

and

and vigorous conſtitutions, raiſed from good original ſtamina; and when attacked with diſeaſes, nature wanted little or no aſſiſtance from art, to reſtore their health; conſequently ſurgery was then looked upon, as almoſt the only neceſſary branch of medicine.*

Ancient hiſtory informs us, though there may be ſomething fabulous and allegorical in it, that *Apollo* communicated his ſkill in this ſcience to his ſon *Æſculapius*, who then profited under the tuition of *Chiron* the Centaur; and for his great improvement and knowledge of it, ſurgery in particular, he was deified, and had temples dedicated to him in ſeveral parts of the world. Many countries contended for the honour of his birth, and, according to the learned, his name ſignifies a man of the knife, in the *Phenician* language; whence ſome writers conclude he was a native of *Phenicia*; but this controverted point, whether he was by birth a *Phenician*, an *Egyptian*, or a *Grecian*, is not material to our purpoſe. In thoſe early days there were no regular profeſſors of the medical art, the knowledge of which was then

 conveyed

* Vid. Diſſertat. phyſico-med. Fred. Hoffmanni de Methodo acquirendi Vitam longam. The great luxury of the Romans in Seneca's time made him ſay, *Non ad rationem ſed ad ſimilitudinem vivimus.*

conveyed by oral tradition, or recorded upon pillars in the moſt public places, or on the walls of temples, dedicated to the God of Health; and afterwards regiſters of cures were kept in thoſe conſecrated places for the general good of mankind.

Machaon and *Podalirius*, the ſons of *Æſculapius*, were both medical and military men, and being particularly ſkilful in ſurgery, they proved very uſeful to the ſoldiers in curing their wounds, in the *Trojan* war; on which account, when *Machaon* himſelf was dangerouſly wounded with a dart, greater lamentation was made for him than for any other hero.

From the deſtruction of *Troy* to the *Peloponneſian* war, which was an interval of more than ſeven hundred years, the *Aſclepiadæ*, deſcendants of *Æſculapius*, and their diſciples, were the only noted profeſſors of the healing art.

About the concluſion of this period of time, the immortal *Hippocrates* began to be famous in the world, who was alſo of the *Æſculapian* family, and lived between four and five hundred years before our *Saviour*. He was endowed with the greateſt ſagacity, excelled all his predeceſſors and contemporaries, and reduced this ſcience into better order, compiling, and laying down for poſterity, rules

founded

founded upon his own obſervations, confirmed by experience, and was deſervedly called the father of phyſic. In his writings he alſo treats of wounds, ulcers, fractures, *&c.* interſperſing obſervations and remarks through the whole, to direct the judgment and practice of ſucceeding ages. He was the ableſt ſurgeon, as well as phyſician, of his time.

The other Greek phyſicians, whoſe writings have been tranſmitted to us in a more univerſal language, treating alſo profeſſedly of ſurgery, are *Oribaſius*, *Alexander*, *Trallianus*, *Ætius* and *Paulus Ægineta*, and the great *Galen*, who flouriſhed more than a century before *Oribaſius*.*

Among the Romans, *Celſus*, a man of a ſublime and penetrating genius, is the only author we have in his time, though he mentions ſeveral; but there is no other record or monument of them left. Both he and *Galen*, who was a practitioner of great repute at *Rome*, though a native of *Pergamus* in *Aſia Minor*, ſpeak of ſome ancient

 ſurgeons,

* Oribaſius was a practitioner of great note at Sardis, in Cent. IV. Æ. C.—What he has ſaid, de Laqueis et Machinamentis, in his voluminous works, is chiefly taken from Heliodorus.—It appears that Paulus was a more conſiderable ſurgeon, having improved upon his predeceſſors.

ſurgeons, as well in *Egypt* as in other parts of the world, whoſe works have periſhed.

When the knowledge of arts and ſciences was transferred from *Egypt* to *Greece*, it received great improvements, and *Athens* was looked upon as the ſeat of all kinds of learning, till the death of *Alexander* the Great; after which æra the *Ptolemies* ruled in *Egypt*, and *Alexandria* became the moſt renowned ſchool in the world, for phyſic, ſurgery, and anatomy, which flouriſhed near a thouſand years: and in thoſe days, phyſicians boaſted of receiving their education in that univerſity. Then the different branches of medicine were practiſed together, and not ſeparated till the time of *Herophilus* and *Eraſiſtratus*, who were educated at *Alexandria*, and lived in the reign of *Seleucus Nicanor*, king of *Syria*, as appears by a memorable incident, in reſpect to the latter of thoſe illuſtrious men, who ſhowed his great penetration in diſcovering *Antiochus*'s diſtemper, when fallen deſperately in love with his mother-in-law, the young and beautiful *Stratonice*, *Seleucus*'s ſecond wife, whom he had married in his old age.*

In the year 640 of the Chriſtian æra, the caliph of the *Saracens*, profeſſed enemies to literature,

* Seleucus began his reign Ao. Mdi. 3684. Eraſiſtratus reſided at his court, and was archiater.

rature, as well as to the Chriſtians, took *Alexandria*, deſtroyed the univerſity, and burnt the library of *Ptolemy Philadelphus*, which was the greateſt magazine of learning in the world, ſaid to contain 700,000 volumes;* however, ſome books might be ſaved out of that lamentable conflagration.

In the ſame century that this dreadful cataſtrophe happened at *Alexandria*, *Europe* was overrun with *Goths* and *Vandals*, by which calamitous event, the liberal arts and ſciences alſo ſuffered very much; and undoubtedly medicine ſhared the ſame fate.

After the fall of *Alexandria*, and the irruptions of thoſe barbarous people, the *Arabians*, having collected libraries, and probably poſſeſſed themſelves of ſome books, that were ſaved out of the flames at *Alexandria*, became more conſpicuous and conſiderable in this ſcience, than any other nation; of which, the moſt eminent who blended ſurgery with their other medical writings, were *Rhazes*, *Avicenna*, *Avenzoar*, *Averrhoes*, and *Albucaſis*.

Rhazes probably was born in the province of *Choraſan* in *Perſia*; he was ſuperintendent of an

* Great part of the *Ptolemean* Library having been burnt in the wars between *Cæſar* and *Pompey*, the loſs was ſupplied, as far as poſſible, by *Cleopatra*, queen of *Egypt*, and her ſucceſſors, at an immenſe expence.

hoſpital there, and died advanced in years, A. C. 932.

Avicenna was the next writer of note among the *Arabians*; he was born at *Bochara* in *Choraſan*, towards the end of the 9th century. He reſided and practiſed at *Iſpahan*. He was a man of extraordinary talents; but ſhortened his days by intemperance and indulgence in pleaſures; he was buried at *Hamadan*.

Avenzoar ſucceeded *Avicenna*; if not born, he reſided much at *Seville*, the capital of the province of *Andaluſia* in *Spain*, then the ſeat of the *Mahometan* caliph. He lived and enjoyed good health to 135 years.

Averrhoes followed *Avenzoar*; he was a native of *Corduba* in *Spain*, and died at *Morocco*.

Of *Albucaſis* the place and time of nativity do not certainly appear; but he comes after *Averrhoes*, and was the beſt acquainted with ſurgery of any of the *Arabians*. There is reaſon to ſuppoſe that he lived in the 11th or 12th century of the Chriſtian æra.

Theſe *Arabians* were favourers of *Galen*'s doctrine, and their authority prevailed unrivalled for many ages.

Afterwards the chemiſts oppoſed the *Galeniſts*, each of which had zealous partizans, who were

were bigotted to the opinion of their chiefs, and combated each others notions with great vehemence, whence a kind of ſchiſm aroſe in the province of phyſic; but the wiſer moderns have freed themſelves from implicit faith, and the embarraſſments of hypotheſes, and fine ſpeculative ſyſtems, more curious than uſeful, regarding only what is founded upon rational experience, to which theory muſt be ſubordinate.

In the 13th century learning emerged from the dark clouds of ignorance, under which it had long been veiled; and about this period of time, the reformation of ſurgery was begun in *England* by *Arden*,* originally a practitioner of great fame at *Newark*, and afterwards in *London:* and it was begun rather earlier in *France*, by *Pitard* and *Lanfranc*.† By a ſucceſſion of men of genius, learning and application here, ſuch as *Gale*, *Clowes*, *Woodall*, *Baniſter*, *Wiſeman*, and many others; and there, by *Vavaſſeur*, *Mondeville*, *Guido* de *Cauliaco*, *Paré*, *Guillemeau*, &c., ſurgery was gradually advanced, in both countries, to it's preſent ſtate of perfection. *Pitard* was a Pariſian by birth, but *Lanfranc* was a native of *Milan*, educated

* Vid. Opera I. Friend, M. D. de Hiſtoria Medicinæ.

† See Hiſtoire de l'Origine & des Progrès de la Chirurgie en France.

educated at *Salernum*, the moſt famous univerſity for phyſic and ſurgery in thoſe days, as it's motto, *Civitas Hippocratica*, emphatically expreſſes. He was driven from *Italy*, with many other learned men, by the dreadful factions of the *Guelphs* and *Gibelines*, at the concluſion of the 12th century, and found an aſylum at *Paris*, where he met with a very honourable reception. His acquaintance with *Pitard* was ſoon improved into a ſtrict friendſhip, which was inviolably preſerved, for the public good, between theſe eminent men, who, co-operating, ſupported with great credit and dignity, the college of St. *Côme*, founded by *Lewis* the Ninth, who was ſainted for engaging in the cruſades; and there public lectures were appointed to be read, and demonſtrations made, in anatomy and ſurgery, by the royal founder. *Pitard* having given early proofs of his extraordinary talents and abilities in his profeſſion, was honoured, before he was thirty years of age, with the appointment of firſt ſurgeon to the king, and ſtanding in the higheſt eſteem, attended him in his expedition to the *Holy-Land*, where he gathered laurels, and returned loaded with honours.

Our neighbours having had for ſome ages, better opportunities, from royal patronage, of acquiring knowledge in their profeſſion, than other countries,

countries, and being regular in giving lectures, and making demonſtrations in anatomy and ſurgery, they diſtinguiſhed themſelves, and were deſervedly extolled throughout *Europe:* and from every part of it, ſurgeons uſed to reſort to *Paris*, to complete their education, which now can no longer claim the ſuperiority to *London*, only in reſpect to the Royal Academy of Surgery, a late inſtitution, truly worthy of a great prince, having the general good of his people, and the glory of his country at heart.—Were the propriety and utility of ſuch an eſtabliſhment repreſented, in it's true light, to his moſt auguſt majeſty, the king of *Great-Britain*, it is highly probable he would be graciouſly pleaſed, to give all due encouragement and ſanction, to ſuch a beneficial foundation in his metropolis.

In the foreign univerſities, the profeſſors of phyſic generally adopted ſurgery; and now, at the famous univerſity of *Edinburgh*, and others, there are profeſſorſhips appropriated to ſurgery and anatomy conjointly. *Marianus Sanctus*, a celebrated lithotomiſt, was a doctor of *Padua*. *Marcus Aurelius Severinus*, *Vigo*, *Fabricius ab Aquapendente*, *Cæſar Magatus*, *Marchetti*, and many other practical ſurgeons, that might be enumerated, were doctors of phyſic. Monſ. *Le Cat* at *Rouen*,

Rouen, and Monſ. *Pouteau* at *Lyons*, chief ſurgeons to the great hoſpitals in thoſe cities, are ſtyled doctors of phyſic and ſurgery. The late illuſtrious M. *De La Peyronie*, who was firſt ſurgeon to the king, and to whom the whole faculty is greatly indebted, was bred, and took a doctor's degree in the univerſity of *Montpelier*. Some of the phyſicians to the kings of *France* were originally ſurgeons, in which country ſingular marks of royal favour have, for many ages, been conferred upon ſurgeons, as we have obſerved; and by a late edict, upon the eſtabliſhment of the Royal Academy of Surgery at *Paris*, no ſurgeon is allowed to practiſe, and be maſter of his company, without having taken a maſter of arts degree in ſome univerſity of that kingdom.*—The great *Fabritius Hildanus*, who flouriſhed in the 15th century at *Bern* in *Switzerland*, was phyſician and ſurgeon in ordinary to that illuſtrious republic, and to the marquis of *Baden*. He ſtands at the head of the firſt claſs of obſervators, and ſhould be in the hands of every practitioner.

Though

* See Hiſtoire de l'Origine & de Progrès de la Chirurgie en France; wherein great encouragement for the improvement of ſurgery appears to have been given by royal edicts, in different ages.

Though in a ſtrict and limited ſenſe, the art of ſurgery is conſidered, only as a methodical application of the hand and inſtruments, and phyſic and ſurgery are now diſtinct profeſſions, yet the latter, having for it's objects of attention all external diſorders, it is abſolutely neceſſary for the ſurgeon to be acquainted with the laws of the animal œconomy,* and every thing relative to the medical art, to acquit himſelf the more properly in his department: and a good knowledge, in the rules and theory of ſurgery, is no inconſiderable addition to the character of a regular phyſician, to whom all deference ſhould be paid, without ſervility. In the very nature of things, both branches of medicine are ſo connected, that they cannot be ſeparated without manifeſt injury, according to the ſentiments of *Celſus*, who ſays; "*Omnes medi-*
"*cinæ partes ita connexæ ſunt, ut ex toto ſeparare non*
"*poſſunt.*" In another place he delivers himſelf thus; "*Ergo eundem quidem hominem poſſe omnia iſta*
"*præſtare concipio; atque ubi ſe diviſerunt eum laudo*
"*qui quamplurimum precipit.*" Lanfranc ſays,
"*Nul ne peut etre bon medicin s'il n'eſt chirurgien, &*
"*nul n'eſt bon chirurgien s'il n'eſt medecin.*" Influenced

* In reſpect to the animal œconomy, baron Haller's Primæ Lineæ Phyſiologicæ may be read with great advantage, and alſo Boerhaave's Inſtitutiones Medicæ.

enced by theſe authorities and conſiderations, I ſhall not confine myſelf, in the following treatiſe, to manual operation and topical remedies only; but give ſome general inſtructions, in reſpect to regimen and internal medicines, as far as it appears eſſentially neceſſary, for the practitioner's own ſatisfaction and his patients' benefit, as the ſurgeon cannot always have the advice and aſſiſtance of the regular phyſician, when he ſtands in need of ſuch advantages, either from diſtance of ſituation, or other circumſtances.*

Hence we ſee how requiſite it is for a ſurgeon to make himſelf as well acquainted, as he poſſibly can, with every part of the medical art; more eſpecially with anatomy, in order to fulfil the duty of his profeſſion: and in *London* now no opportunities are wanting to favour all ſuch purſuits. Beſides theſe qualifications, and thoſe recommended by *Celſus*, as a ſtrong, ſteady hand, a clear ſight, with calmneſs and fortitude of mind, *&c.* it is incumbent upon the ſurgeon, to weigh well and conſider circumſtances and incidents, that may poſſibly occur, in any conſiderable operation he is about

* Baron Van Swieten's Commentaries upon Boerhaave's Aphoriſms, furniſh us with a plentiful ſtock of uſeful knowledge, in the theory and practice of phyſic and ſurgery, and ſhould be read with the utmoſt attention.

about to perform, that he may not be diſconcerted, ſhould any thing extraordinary happen in it. It is alſo a matter of no ſmall conſideration, to engage the patient's confidence in us, by ſhowing him the reaſonableneſs and propriety of what we propoſe for his cure or relief: and we ſhould endeavour to ingratiate ourſelves into his favour and opinion of us, by all the demonſtrations of tenderneſs and humanity the nature and circumſtances of the caſe will allow, which conduct will the moſt effectually compoſe and ſettle his mind, enabling him to bear, with the greater patience and reſignation, whatever he muſt unavoidably ſuffer.

Before we undertake the cure of a diſeaſe, by manual operation, or otherwiſe, it is neceſſary to be thoroughly acquainted with it, and to have a due regard to the patient's age, ſex, conſtitution, cuſtomary way of life, and diſpoſition of mind. We muſt particularly inquire into the ſource of the diſtemper, conſider it's nature, the part affected, the effects it has produced, and the probable event, with every other circumſtance to direct our judgment: and, after having fully poſſeſſed ourſelves of the *diagnoſtics* of the diſeaſe, we are to proceed to the *prognoſtics*, with great care and circumſpection, as it is a very nice point to manage, both in reſpect to the patient, and our own reputation.

reputation. Laſtly, we are to put in practice the eaſieſt, ſafeſt, and moſt expeditious method of cure, remembering, by all means, that when an operation is judged expedient, due preparation before, with great care and attention after it, is as eſſentially neceſſary to ſecure its ſucceſs as performing it well. The ſurgeon ſhould ſtudiouſly avoid being in a hurry, in any operation; for by endeavouring to gain the character of a dexterous operator, he may, through quickneſs, cut parts that ought not to be touched, or omit doing what ought to be done. This rule of a very wiſe profeſſor, deſervedly held in the higheſt eſteem, ſhould ever be borne in mind. "*Sàt citò, ſi ſàt benè.*" which is applicable to all operations in ſurgery; the excellence, or gracefulneſs of performing them, not conſiſting in the greateſt quickneſs altogether: and there is ſcarce any accident, or difficulty, that can happen, which may not be overcome, when the operator is maſter enough of himſelf to preſerve a compoſure and preſence of mind; but when the contrary is the caſe, and the mind is diſconcerted, the hand of courſe will ſhake and the judgment falter; which unlucky circumſtances, when obſerved, may greatly prejudice the reputation of an able ſurgeon.

OF THE

RISE, PROGRESS, AND PRESENT STATE OF ANATOMY.

AFTER having written the introduction, and following treatiſe, ſome reaſons occurred to my mind, which upon imparting to my friends, induced them to think with me, that, before entering upon our ſubject, a tranſient view of the riſe and progreſs of anatomy alſo, with a ſhort hiſtorical account and character of ſome of the moſt conſpicuous men, ſucceſſively concerned in the advancement of that ſcience, might not prove unacceptable, or quite an unprofitable amuſement to the young gentlemen, for whoſe ſake I adventure to write. Indeed anatomy is ſo cloſely connected with the profeſſion of ſurgery, and ſo fundamentally neceſſary to be underſtood,

that no exhortation or incentive can be really wanting, to enforce an early and aſſiduous application to this moſt entertaining part of natural philoſophy, ſuperior to every branch of it, for dignity of ſubject and utility to mankind.*

Not to interrupt the order of this abſtract hiſtory of anatomy, I ſhall be obliged to repeat ſome incidents and circumſtances, that have been before mentioned in the introduction.

As we have already obſerved in the introduction, bloodſhed and wars were early practiſed in the world; conſequently ſurgery was coëval with it's neceſſity, and hence we may reaſonably infer, that thoſe who were converſant in curing wounds, and other external injuries, ſoon made ſome uſeful anatomical diſcoveries and remarks, there being in the mind of man a ſtrong propenſity and inquiſitiveneſs, to improve his knowledge in all things neceſſary to life, more eſpecially thoſe of ſuch importance, as tend directly to his own preſervation, and very exiſtence.

As

* Read the great doctor Charleton's preface to his Anatomical Lectures, delivered at the theatre of the illuſtrious College of Phyſicians in London, immediately after it was erected, by the munificence of ſir Thomas Cutler, who was an exemplary patton of learning and learned men.

As the practice of embalming dead bodies was much in uſe among the *Egyptians*,* it is no unreaſonable ſuppoſition, that thoſe who exerciſed this art might make ſome anatomical remarks applicable to ſurgery, even before the *Greeks* were renowned for their ſkill in arts and ſciences, for which they were originally indebted to the *Egyptians:* and upon the authority of *Pliny*, we may ſay opening dead bodies was ſometimes practiſed in *Egypt*, and even encouraged there by the wiſeſt kings and princes, in order to inveſtigate the nature and cauſe of diſeaſes and death.†

We ſhall begin with *Æſculapius*, whom hiſtorians ſay, as we have related before, was the ſon of *Apollo*, and had *Chiron* for his maſter, a great philoſopher in thoſe days, well ſkilled in the ſciences and the medical art, who dwelt upon mount *Pelion* in *Theſſaly*, where the great men uſed to reſort to him for inſtruction, according to *Clemens Alexandrinus*. *Galen* ſays, *Æſculapius* much improved the medical art, particularly ſurgery, or the treatment of external diſorders, which was then in the greateſt eſteem, as it's uſefulneſs came

* Vid. Diodor. Sicul.

† See Rider's notes upon the laſt chapter of Geneſis, relating to the ancient manner of embalming among the Egyptians.

more immediately under the evidence of the ſenſes; and undoubtedly he acquired ſome practical knowledge in anatomy, though there were no regular profeſſors of that ſcience in his time. For his reputed great ſkill in his profeſſion, he was deified, and had temples conſecrated to him at *Epidaurus*, *Pergamus*, *Cos*, and other parts of the world, which were much frequented in thoſe days; and the prieſts, who had the ſuperintendence of theſe ſacred, oracular places, very well knew how to impoſe upon the credulous, to their own emolument and advantage.*

Machaon and *Podalirius*, the ſons of *Æſculapius*, were celebrated for their ſuperior ſkill in ſurgery, when they attended the *Trojan* war, under the conduct of *Agamemnon*, and conſequently they muſt have acquired ſome practical anatomy. *Homer* himſelf, who has recorded their actions, as ſoldiers, as well as ſurgeons, was alſo a great philoſopher, and appears to have been theoretically

* In the time of a raging peſtilence, the Romans having conſulted the oracle of Apollo at Delphos, to know what they ſhould do in that calamity, fetched Æſculapius from Epidaurus where he was chiefly worſhipped; and on this occaſion he had a temple built by them, in an iſland near the mouth of the Tiber, and dedicated to him, as Ovid informs us.

cally acquainted with ſurgery and anatomy, by his deſcriptions.

Le Clerc ſays,* from *Pauſanius*, that *Machaon* married *Anticlea* the daughter of *Diocles*, king of *Meſſenia*, by whom he had two ſons, *Nicomachus* and *Gorgaſus*. They enjoyed their grandfather's dominions, till they were expelled by the *Heraclides*, deſcendents of *Hercules*, who ſat up a prior claim, their progenitors having been lords of *Peloponneſus*.

Podalirius, in his return from the *Trojan* war, upon the authority of *Stephanus Byzantinus*, was ſhipwrecked upon the coaſt of *Caria*, and preſerved by a ſhepherd, who, underſtanding he was ſkilful in curing diſeaſes, carried him to king *Damæthus*, whoſe daughter he cured of a miſchief received by a fall; which happy event highly pleaſed the king; and after he was acquainted with his hiſtory and extraction, he gave him his daughter in marriage, with the *Cherſoneſe* for her portion, where he built two towns, calling the one *Syrna*, which was the name of his wife, and the other *Bybaſſus*, the name of the ſhepherd who ſaved his life after his ſhipwreck.†

* Hiſtoire de la Médecine.

† It is ſaid he cured the princeſs by bleeding on both arms; and that this is the firſt inſtance of the practice of phlebotomy which is to be met with.

From the concluſion of the *Trojan* to the *Peloponneſian* war, an interval of more than ſeven hundred years, the *Aſclepiadæ*, as we have before intimated, were almoſt the only people who diſtinguiſhed themſelves in the medical art. They eſtabliſhed ſchools for the ſtudy and improvement of this ſcience, in different parts of *Greece*, which ſpread the knowledge of it into diſtant countries: and we are told, with good authority, that anatomy was ſo peculiar an object of their notice and attention, that they uſed to teach their children to diſſect brutes from their infancy.

The native country of *Pythagoras* is uncertain; ſome ſay he was a *Tyrian*, others a *Syrian*, and ſome that he was born at *Samos*. To increaſe his knowledge, he travelled into *Egypt*, to *Babylon*, *Chaldæa* and other parts of the world, famous for arts and ſciences, though now depopulated, and fallen from their ancient glorious ſtate, overwhelmed with barbariſm, and ſunk into abject ſlavery. At his return from his travels, he came to *Samos*, intending to make that city the place of his reſidence, but not being able to endure the tyranny of *Polycrates*, he fled from thence, and dwelt at *Crotona* in *Italy*, where he was the founder of a ſchool for the ſtudy of phyſic. He was the firſt that joined philoſophy

to

to the ſtudy of that ſcience; a man of great abilities and application; and it appears, that anatomy was not diſregarded by him. He flouriſhed in the time of *Tarquin* the laſt king of *Rome*, became very illuſtrious by his learning, virtue, and perſuaſive eloquence, and died full of years and full of glory.

Empedocles was one of *Pythagoras's* brighteſt ſcholars, a *Sicilian*, born at *Agrigentum*. He was an eminent phyſician and philoſopher, and underſtood anatomy; and, I think, *Lucretius* mentions him both as a poet and an hiſtorian. There are various opinions concerning the manner of his death; ſome ſay, he threw himſelf into mount *Ætna*, others, that he was drowned in the ſea, but no valid authority appears to prove the truth of either of theſe cataſtrophes.

Alcmæon was by birth a *Crotonian*, became a phyſician of great fame, and applied himſelf much to anatomy; in his philoſophic principles he was a *Pythagorean*.

Democritus was an eminent phyſician, and one of the greateſt philoſophers of antiquity. If *Abdera* in *Thrace* was not the place of his nativity, it was undoubtedly that of his reſidence. He had ſuch an inſatiable paſſion for learning, and all the ſciences, that he ſpent great part of

his patrimony in purſuit of knowledge, incurring the cenſure of the ſtate for prodigality, on that account. He travelled into *Egypt*, *Perſia*, and the remoteſt parts of the earth, making himſelf acquainted, and conferring perſonally with philoſophers and phyſicians, the magi, gymnoſophiſts, &c. renowned for learning in thoſe days. He diſſected brutes, in order to diſcover the ſeat of the bile; and in his philoſophic notions was an atomiſt and a vacuiſt.

The people of *Abdera* apprehended *Democritus* was grown mad, becauſe he delighted in retirement, and was always laughing at the follies and vanities of the world; but ſtill having the greateſt veneration for him, they ſent for *Hippocrates* to come and cure him of the ſuppoſed inſanity of his mind. *Hippocrates* found him engaged in diſſecting brutes, and aſking him why he did ſo, he ſaid it was to diſcover the ſeat and nature of the bile, a predominance of which humour, he conceived, was the cauſe of madneſs; which rational anſwer began to make *Hippocrates* think thoſe who ſent for him wanted hellebore more than *Democritus*; and after having had a long conference with him, he was fully convinced of the ſanity of his mind, and declared him not only perfect

perfect in his intellectual faculties, but that he believed him to be one of the wiſeſt men in the world. In all probability, this interview laid the foundation of an inviolable friendſhip between theſe illuſtrious men, who held an epiſtolary correſpondence afterward. He lived to be more than one hundred years old, and bore the misfortune of loſing his ſight ſome time before his death, like a divine philoſopher.

Damocrates was an eminent phyſician, and ſaid to have had the honour of being *Hippocrates's* maſter in anatomy; but he was ſoon excelled by his ſcholar.

Hippocrates was born in the iſle of *Cos*, about thirty years before the *Peloponneſian* war, and between four and five hundred before Chriſt; and was educated at the ſchool, eſtabliſhed by the *Aſclepiades*, in the city of *Cos*, the metropolis of that iſland. He was the eighteenth in deſcent from *Æſculapius*; his father's name was *Heraclides*, and he was of as noble extraction by the mother's ſide, who was of the lineage of *Hercules*. Beſides the advantages he reaped by his father's early inſtruction, he was under the tuition of *Herodicus*, an eminent phyſician, who firſt introduced gymnaſtics in the cure of diſeaſes, as well

well as in the prevention of them;* he was alſo pupil to *Gorgias*, brother to *Herodicus*, a famous rhetorician and philoſopher. This great luminary eclipſed all that roſe before him; he wrote much upon the ſtructure of the human body, and was the greateſt phyſician, ſurgeon, and anatomiſt of his own time.

Hippocrates's fame was ſo great, when the plague raged, and made dreadful devaſtation in *Perſia*, that *Artaxerxes* ſent for him in the moſt preſſing manner, to aſſiſt his diſtreſſed country, offering to load him with riches and honours; but he refuſed to go, as he had done before to the *Illyrians*, in the ſame calamitous ſtate, though they alſo offered him the greateſt rewards, apprehending his own country might want his aſſiſtance. He went himſelf to advertiſe the *Athenians* of what was to be feared, from his obſervations in reſpect to the winds, and other circumſtances, adviſing them what ſteps to take, in order to avert the impending danger.

When

* The Perſians, the Greeks, and the Romans, wiſely inſtituted various kinds of games and bodily exerciſes, to ſtrengthen the conſtitution and prevent diſeaſes; as well as to render their people active and better fitted, by athletic exerciſes, for all martial exploits.

When *Hyſtanes*, governor of the *Helleſpont*, wrote to *Hippocrates*, by his maſter's command, in an imperious ſtyle, promiſing him the greateſt rewards of riches and honour, to tempt him to go, he was much diſpleaſed, and anſwered in theſe terms.—" *Victu et veſtitu, & domo, & omni* " *ad vitam ſufficienti opulentia fruimur; Perſarum* " *autem divitüs uti, fas mihi non eſt: neque barbaros* " *homines a morbis liberare, qui hoſtes ſunt Græco-* " *rum.*" This anſwer incenſed the king ſo much, that he denounced utter ruin and deſtruction on the people of *Cos*, and that he would lay their country waſte, if they countenanced ſuch inſolence; but thoſe brave and generous iſlanders, replied with a becoming ſpirit and reſolution, to the menaces of that mighty earthly prince, who haughtily ſtyled himſelf king of kings, declaring they would protect ſo worthy a citizen, and ſo virtuous a man, and not deliver him up to his chaſtiſement, let what would be the conſequence of his reſentment.

From a juſt ſenſe of his probity and integrity, his unſhaken conſtancy, his attachment and love to his conntry, and the *Greeks* in general, in reſiſting ſuch powerful temptations; and in conſideration of the regard he had paid to the *Athenians* in particular, the ſenate decreed that he ſhould

ſhould be preſented with a golden crown, and have all the honours that *Athens* could give, conferred upon him: and for his ſake, the youth of the iſle of *Cos* were invited to receive their education at *Athens*, with the youth of that univerſity, then in it's flouriſhing ſtate, and diſtinguiſhed throughout the world, for being the ſeat of the liberal arts and ſciences, and all polite literature; now miſerably changed to ignorance and barbariſm. Strange viciſſitudes in all ſublunary things!—The perfections and eminent virtues of this venerable man, conſecrated him to immortality, and placed him among the divinities, after living more than one hundred years in the greateſt repute and glory.

Hippocrates left two ſons, *Theſſalus* and *Draco*, who followed the profeſſion of their father, but fell far ſhort of his reputation and excellence. *Theſſalus*, the eldeſt of them, was moſt known in the world, and ſpent the greateſt part of his life in the court of *Archelaus*, king of *Macedonia*. There is an oration of his to the *Athenians*, at the end of the works of *Hippocrates*. Nothing memorable appears of *Draco*, only that his ſon, of his grandfather's name, was phyſician to *Roxana*, *Alexander*'s favourite miſtreſs.

Polybus

Polybus was one of *Hippocrates's* moſt celebrated diſciples, and married his daughter. After the death of his father-in-law, he undertook the inſtruction of his pupils; and acquired great reputation in his profeſſion.

Plato, called the divine philoſopher, was a great metaphyſician, and chief of the academies. He followed the ſteps of his predeceſſors, joining philoſophy to phyſic. His notions concerning the ſpinal marrow, the brain, the heart, the action of reſpiration, &c. entitle him to be claſſed among the anatomiſts. He was born at *Athens*, and brought up under *Socrates*.

Diocles was a phyſician of the greateſt diſtinction after *Hippocrates*; the *Athenians* called him the ſecond *Hippocrates*; and *Galen* ſays, that none before him diſſected and diſplayed the parts ſo well.

Praxagoras was a famous phyſician, a native of the iſle of *Cos*, as well as *Hippocrates*, and of the the ſame family; the laſt of the race of the *Aſclepiadæ*, who excelled in his profeſſion; and he was conſidered as a great anatomiſt in his time.

Philotimus, *Eudemus*, and *Pliſtonicus* were diſciples of *Praxagoras*. *Galen* gives the firſt the character of a good ſurgeon; and ſays the ſecond was an accurate anatomiſt, particularly in reſpect to

to the nerves. *Celſus* ſpeaks of the third, but not in very advantageous terms, concerning his notion of the digeſtion of the aliment in the ſtomach.

Ariſtotle was a native of *Stagyra*, a ſmall city in *Macedonia*, born about four hundred years before our Saviour. He ſtudied under *Plato* at *Athens*, was one of his moſt ſhining ſcholars, but gave his maſter much offence, by oppoſing his doctrine; and afterward he became the head of the *Peripatetics*. He had great opportunities of improving his genius, under the patronage of *Alexander* the Great, who was his pupil. He was conſidered as a phyſician, as well as a great philoſopher, and by his writings it appears he paid attention to anatomy; but entertained ſome odd notions, in reſpect to phyſiology, and the uſe of many parts of the human body.

Herophilus and *Eraſiſtratus* were celebrated phyſicians, and profeſſors of anatomy at *Alexandria*, after the death of *Alexander* the Great. It is ſaid, they diſſected a great number of human bodies, and were accuſed of opening ſome alive, to diſcover the motion of the heart, &c. They made many anatomical diſcoveries; and *Fallopius*, who was an eminent profeſſor at *Padua*, was ſo great an admirer of *Herophilus*, as to declare,

he

he would as ſoon contradict the goſpel as *Herophilus*.*

According to *Galen*, the ſchools eſtabliſhed by theſe great men, and their diſciples, were long in high repute; and *Strabo* teſtifies, that near his time there was a ſchool of *Herophilians*, in *Phrygia*, in which *Zeuxis*, a man of great note, preſided, who was bred under *Herophilus*.—— About the ſame time, there was alſo a ſchool of *Eraſiſtratens*, at *Smyrna*, of which *Hiceſius* was maſter, who had the character of being one of the greateſt phyſicians of thoſe days.—Hence we may juſtly conclude, that the ſtudents in theſe ſeminaries were taught anatomy: and as *Herophilus* and *Eraſiſtratus* were profeſſed and celebrated anatomiſts, it is very reaſonable to ſuppoſe the diſciples of ſuch eminent profeſſors ſhould imbibe their principles, follow their precepts, and daily ſtudy to make improvements, for the benefit

* Herophilus was one of Praxagoras's pupils, and Eraſiſtratus was educated under Chryſippus, whom he far excelled. They might reaſonably be looked upon as better anatomiſts than their predeceſſors, having had bodies of malefactors delivered to them by the order of Ptolemy Soter and Philadelphus, founders of the Alexandrian Library, to be diſſected for the improvement of anatomy, &c.

nefit of thoſe that might come under their inſtruction.

Serapion and *Philinus*, and many other phyſicians of eminence, were of the empirical ſect, ſo called for relying upon practice and experience only, in the acquirement of medical knowledge, without introducing philoſophy into the ſtudy of it. They were educated under *Herophilus*, at *Alexandria*, conſequently acquainted with anatomy; ſo was *Heraclides*, of *Tarentum*, a famous empiric, who was alſo reputed a very ſkilful ſurgeon.

Apollonius, of *Memphis*, now *Grand Cairo*, the capital of *Egypt*, and many phyſicians of eminent character there, were ſcholars of *Eraſiſtratus*, and wrote upon anatomical ſubjects, as we are told by the learned, though their works have periſhed through time.

In the declenſion of the *Grecian* empire, when the *Romans* had made large ſtrides towards univerſal monarchy, and *Rome*, in great ſplendour and magnificence, became the ſeat of univerſal learning, arts, and ſciences, which the *Greeks*, unrivalled, had long and glorioufly cultivated at *Athens*, *Arcagathus*, a *Peloponneſian*, came and reſided at *Rome*, in the conſulate of *Lucius Æmilius* and *Marcus Livius*, and after him ſome other

Greek

Greek phyſicians; but their practice and conduct proving very diſpleaſing to the *Roman* people, ſome writers have imagined, they were baniſhed the city on that account, by a decree of the ſenate, promoted by *Cato*; however, that event is not ſupported with inconteſtible evidence, though it is very certain *Cato* entertained an averſion to the *Greeks*, and approved the medical art, as it had long been practiſed at *Rome*, in great ſimplicity, rather than be obliged for improvement of it, to thoſe whoſe morals offended his rigid virtue.

Till the time of *Julius Cæſar*, this art was not patroniſed and encouraged at *Rome*, like other arts and ſciences; but by an edict of that emperor, foreigners, particularly the *Greeks*, they being moſt ſkilful in phyſic, were invited thither, and promiſed they ſhould be made deniſons, enjoying all the privileges and immunities of *Roman* citizens; which invitation and fair proſpect of accruing advantages, brought many great men to the metropolis of the world, raiſing a ſpirit of emulation in the native *Romans*, to proſecute medical ſtudies, who afterwards made a ſhining figure in their profeſſion, and were much in favour with the emperors, and people of the higheſt rank and character for learning, as we are well informed

from hiſtory: and the indignity that ſome hiſtorians have caſt upon the *Roman* phyſicians, ſeems not well founded.

About one hundred years after *Arcagathus*, who was the firſt *Grecian* phyſician that left his native country, and came to practiſe at *Rome*, *Aſclepiades* ſettled there, following the example of his countrymen, with a view of making his fortune better than at home. He was called a dogmatiſt, becauſe he joined reaſoning to experience, in oppoſition to the empirical ſect, which admitted only of experience, as the ſolid baſis to build medical ſcience upon. He was a native of *Pruſa*, in *Bythinia*, which is indebted for its numerous pleaſant rills and fountains to proud *Olympus* aſpiring to the clouds; and near this city too are the celebrated baths of *Calypſo*, much reſorted to for their ſalubrious virtues. Upon his arrival at *Rome*, he firſt taught rhetoric, which ſcheme not anſwering his expectations, he turned his thoughts to phyſic, having ſtudied it at *Alexandria*, and ſoon acquired great reputation and eſteem in his new profeſſion, by treating his patients in a gentle manner, and more agreeably to their own humours, departing from the ſevere and rigid rules of his predeceſſors, allowing them wine and other indulgences. By his complacency and ſuperior under-

underſtanding, he gained the hearts of the people ſo much, that he was adored, and compared to *Hippocrates* himſelf, and had a marble buſt erected to perpetuate his memory. He was conſidered by the literati at *Rome* as a very learned and eloquent man, as well as an eminent phyſician; much admired by *Cicero*, who called him his friend, an honour that gave him more pleaſure than the favour of king *Mithridates*, who was a great patron of medical men, and having a high opinion of this illuſtrious man's abilities in his profeſſion, invited him to his court; but he reſiſted the moſt powerful temptations of that prince. He entertained ſome ſingular anatomical and phyſiological notions; but had a great many diſciples and followers, till the methodical ſect ſprung up, of which we ſhall take notice preſently. There were ſeveral phyſicians of high character his contemporaries at *Rome*, with whom he lived in great amity.——*Antonius Muſa*, *Auguſtus*'s favourite phyſician, who flouriſhed many years after, and had a ſtatue erected to immortalize his name, near that of *Æſculapius* at *Rome*, was a great admirer of *Aſclepiades*, to whom he acknowledged himſelf much indebted.*

* Read biſhop Atterbury's beautiful diſſertation upon Antonius Muſa's character, repreſented by Virgil in the perſon of Japis.

Caſſius, a man of great repute, ſucceeded *Aſclepiades*. He is ſpoken of as one of the moſt celebrated phyſicians of the age in which he lived. He was bred under *Aſclepiades*; but in his latter days diſſented from ſome of his maſter's tenets. He underſtood ſurgery, aſſigned reaſons for round ulcers healing with more difficulty than thoſe of an oblong or angular figure; and he was of opinion, that the oppoſite ſide becoming paralytic, in an injury of the brain, was owing to a decuſſation of the nerves; but that is not allowed an anatomical fact; nor is the effect invariable, though the oppoſite ſide is more generally ſo affected, as experience evinces. *Galen*, and *Scribonius Largus*, phyſician to *Claudius*, mention him in advantageous terms. That emperor ſtudied phyſic, and was a great patron of the profeſſors of it: and in his reign alſo lived *Alcon*, a famous ſurgeon and anatomiſt, called by *Pliny*, *Medicus vulnerarius*, who acquired an immenſe fortune by his practice.

Themiſon was a *Laodicean*, a diſciple of *Aſclepiades*, and founder of the methodical ſect, ſo called from propoſing a method to render phyſic more eaſy to be learnt and practiſed, without joining philoſophy to it; and the practice of the phyſicians of this ſect conſiſted principally in abſtemiouſneſs

ſtemiouſneſs and ſlender diet. This phyſician practiſed at *Rome*, towards the concluſion of the reign of *Auguſtus*, or beginning of that of *Tiberius*. This ſect had great affinity to the empirical, eſtabliſhed by *Serapion* two hundred years before, with the ſame view of facilitating the ſtudy and practice of phyſic; and in thoſe days empiriciſm was ſeen in no contemptible light. *Themiſon* had many favourers and admirers of his doctrine, as well as *Serapion*; the moſt conſiderable of the methodiſts after *Themiſon*, was *Soranus*, an *Epheſian*, who was educated at *Alexandria*, and afterwards reſided at *Rome*, in the time of *Trajan*. *Cœlius Aurelianus* makes honourable mention of him; and there is ſome reaſon to believe he tranſlated his works into Latin, or at leaſt copied much from them. *Aurelianus* was eſteemed a good anatomiſt, by birth a *Numidian*, a reſident and practitioner at *Rome*; but at what time is uncertain.

After the methodiſts, the epiſynthetic, the eclectic, and the pneumatic ſects ſprung up, and had many adherents. The firſt united the ſentiments of the three preceding: the ſecond choſe what they judged beſt from each of them; and the third was ſo called, from ſuppoſing that an

ethereal ſpirit or air entered all bodies, poſſeſſing ſpace univerſally.—*Leonides*, of *Alexandria*, was an epiſynthetic. *Archigenes*, a native of *Syria*, and a practitioner at *Rome* in the time of *Trajan*, an eclectic. *Atheneus*, a famous phyſician, by birth a *Cicilian*, embraced the pneumatic ſyſtem. *Aretæus*, the *Cappadocian*, was alſo a favourer of the pneumatic doctrine. He was an excellent writer; but it is not preciſely known in what time he lived, though it is generally thought to have been in the reign of *Veſpaſian*, and that he was contemporary with *Pliny*.

All theſe ſects paid regard to anatomy.

Aurelius Cornelius Celſus was a native of *Rome*, according to ſome, and others ſay, of *Verona*. He was a phyſician, ſurgeon, and anatomiſt, of the higheſt character in his time, ſtyled the Latin *Hippocrates*, and has ever been held in reverential eſteem. Under what emperors he lived, is a matter of doubt among the learned; moſt are of opinion, and indeed it is highly probable, that he was born in the reign of *Auguſtus*, and wrote in that of *Tiberius*. His ſtyle is the moſt elegant and admired of any of the *Roman* phyſicians, but ſeems rather too elegant and conciſe for medical ſcience. He confeſſes himſelf greatly indebted to *Aſclepiades*,

Aſclepiades, as well as to *Hippocrates*, for his knowledge in his profeſſion.*

Ruffus Epheſias flouriſhed in the reign of *Trajan*. *Galen* honours him with the character of one of the moſt conſiderable phyſicians in his time. He attempted to give a general idea of anatomy, and has clearly deſcribed the ſpermatic veſſels, and thoſe running to the *ovaria*: hence it is not improbable, that the *tubæ fallopianæ* might be a a diſcovery of his too, though aſcribed to *Fallopius*. Apes were commonly the ſubjects for diſſection in thoſe days at *Rome*, it being very difficult to get human bodies there, for that purpoſe, though undoubtedly they were ſometimes procured.

Claudius Galenus was an *Aſiatic*, born at *Pergamus*, a city famous on many accounts, eſpecially for the temple dedicated to *Æſculapius*. His father's name was *Nicon*, a man of diſtinction, verſed in arts and ſciences; he inſtructed his ſon very early himſelf, and ſpared no pains or expence in his education, procuring him the moſt able and learned maſters, in every branch of literature. His mother was a notable economiſt,

* Vid. Aurel. Cornel. Celſi vitam à Rhodio conſcriptam. It is prefixed to Almeloveen's edition of Celſus. Et Hiſtoire de la Médecine, par Monſ. Le Clerc.

but too much a *Xantippe* for his father's peace. After having finiſhed his academical ſtudies, he became a very great traveller, in purſuit of knowledge, and when he returned from his travels, he dwelt ſome time at *Alexandria*, where he had been educated. At twenty-eight years of age he removed to *Pergamus*, and was driven from thence at thirty-two, by a popular ſedition, and went to *Rome*, with an intention to fix his reſidence in that imperial, attractive city, where arts and ſciences were cheriſhed and cultivated. There he met with ſignal marks of favour and eſteem, from people of the higheſt rank and character; but this diſtinction raiſed him many enemies in the faculty. The envious treatment, which his ſuperiority occaſioned, made his ſituation ſo diſagreeable and uneaſy, that after having dwelt four or five years at *Rome*, he returned to *Pergamus*. Soon after that, *Marcus Aurelius* and *Lucius Verus*, generals of the *Roman* army then at *Aquila*, hearing of his great fame, ſent an expreſs for him, and he attended the former of theſe great perſonages to *Rome*, the other dying in his return home. *Galen* having then the good fortune, ſhortly after his arrival at *Rome*, to cure *Sextus*, one of the ſons of *Marcus Aurelius*, predicting the event of his diſeaſe, contrary to the opinion of the

the other phyſicians concerned, his reputation was highly exalted. This happy preſage made him conſidered as the greateſt phyſician of his time; and his excellence in ſurgery, which he alſo practiſed, is manifeſt in many inſtances. But great men have their foibles; he entertained ſuperſtitious notions, was full of ambition, quick of reſentment, too ſenſible of injuries, as we have ſeen; and remembering, with ſome indignation, the detraction and malevolence he received from his brethren before, he laid hold of the advantage his popularity now gave him, to ſhow his reſentment of former indignities, which effectually ſilenced his enemies. He was an excellent orator, and the beſt anatomiſt that had ever been at *Rome:* many perſons of the higheſt diſtinction honouring him with their preſence at his lectures and demonſtrations, popular prejudices were in a great meaſure removed, and the *Roman* people in general better reconciled to anatomy. He wrote his book *de Uſu Partium*, the moſt admired of all his works, at the deſire of *Lælius*, his friend and patron, a man of conſular dignity. In all probability at *Rome* he might find difficulty in procuring human bodies for diſſection; yet that he did diſſect ſuch, as well as apes and other animals, is very evident from his own writ-

ings,

ings, notwithſtanding that ſome writers have ſuggeſted to the contrary. I have read that the phyſicians and ſurgeons, who attended *Marcus Aurelius* in the *German* war, were allowed to diſſect enemies bodies ſlain in battle; and that this extraordinary man had the like indulgence granted him, in the expedition he attended into *Gaul*. He made many uſeful diſcoveries and remarks, aſſumed by ſucceeding anatomiſts, of which they availed themſelves. His phyſiological and medical notions were implicitly followed for many ages, and the *Arabians* were much indebted to him for their reputation in the world. He was a very voluminous writer, and employed his pen upon various ſubjects, beſides what related peculiarly to his profeſſion. Many of his books were depoſited in the Temple of Peace at *Rome*, and deſtroyed when that was burnt.*

Lucius Apuleius lived at the ſame time with *Galen* at *Rome*. He was an *African*, born at *Madaura*; his father's name was *Theſeus*, a man of great account in his country, and his mother was related to *Plutarch*. He ſtudied firſt at *Carthage*, and then at *Athens*, and followed the profeſſion of the

* Though Galen was a pagan, yet he ackowledged in his excellent book de Uſu Partium, one God and his attributes; and oppoſed the Epicurean ſyſtem and doctrine.

the law for ſome years after he came to *Rome*: and being a man of extraordinary talents and elocution, gained great applauſe at the bar, yet quitted it for phyſic. He was a great admirer of *Plato*, followed his example in joining philoſophy to that ſcience, conſidering that theory and practice united were neceſſary qualifications for a phyſician: and he arduouſly purſued anatomical inquiries.

Oribaſius, *Alexander Trallianus*, *Ætius*, and *Paulus Ægineta* were great writers, but chiefly compilers, and may be conſidered as anatomiſts. *Paulus* was the laſt of the *Alexandrian* ſchool.

The time when theſe eminent men lived and wrote cannot preciſely be determined, but, according to the learned doctor *Friend*,

Oribaſius was born at *Pergamus* as well as *Galen*, and educated in the ſchool of *Zeno* the *Cyprian*, at *Sardis*, who was a founder of the *Stoical* ſect. He was conſidered as the greateſt ſcholar and phyſician of his time, and of a very engaging addreſs. He wrote about the middle of the fourth century, and dedicated his works to the emperor *Julian*. He practiſed and died at *Conſtantinople*.

Ætius was born at *Amida*, in *Meſopotamia*, educated at *Alexandria*, and wrote towards the concluſion of the fifth century. He has ſome things not

not to be found in his predeceſſors; and wrote with great perſpicuity.

Alexander Trallianus was born at *Tralles*, a city of the *Leſſer Aſia*, lying between *Caria* and *Lydia*. He made a great figure at *Rome* in the reign of *Juſtinian*, in the ſixth century. He was called, by way of eminence, *Alexander the Phyſician*. He compiled his works, as he ſays himſelf, in an advanced age.

Paulus Ægineta ſucceeded *Alexander*. He flouriſhed in the ſeventh century, and excelled all the others in point of ſurgery.

The works of theſe illuſtrious *Grecians* were tranſlated into *Latin* from their native language, by *Raſarius*, *Cornarius*, and *Guinterius*.*

Under the conduct of the caliph, as we have before obſerved, the *Saracens* took *Alexandria*, A°. C^ti^ 640, deſtroyed the univerſity, and burnt the library, which was the greateſt repoſitory of learning in the world.——Soon after the deſtruction of this famous univerſity, learning ſprung up in *Arabia*; and from that time to the 13th century, the *Arabians* were almoſt the only people who cultivated the medical art; and, in all probability, ſome books fell into their hands, ſaved out

* Vid. Medicæ Artis Principes poſt Hippocratem & Galenum.

out of the flames.——In the ſame century too, as we have mentioned, the irruption of the *Goths* and *Vandals* proved greatly detrimental to learning of every kind in *Europe*.—*Rhazes*, *Avicenna*, *Avenzoar*, *Averrhoes*, and *Albucaſis*, were the moſt noted among the *Arabian* phyſicians who wrote upon ſurgery alſo, as has been ſaid; but their anatomical deſcriptions were borrowed from the *Greeks*; for a ſuperſtitious notion prevailed with them, as with the *Jews*, that touching a dead body defiled the living.

After the fall of *Alexandria*, univerſities were opened in ſeveral parts of *Europe* for the ſtudy of phyſic, which, from various concurring cauſes and circumſtances, made a very ſlow progreſs for many ages; but about the 13th century, learning began to ſpring up, and medical art to flouriſh.

Mundinus was an eminent profeſſor at *Padua* in this century, whoſe compendium of anatomy was appointed, by the laws of that and other univerſities in *Italy*, to be uſed as the text-book, for the profeſſors to comment upon, and continued in that great credit for near three hundred years. Early in the 15th century, *Alexander Achillinus*, a *Bononian* profeſſor, and his brother *Philotheus*, improved it; ſoon after, *Berengarius*, ſtyled the

Italian

Italian Herophilus, wrote large and learned commentaries upon this book, and ſo it ſtood in uſe, till the time of *Morgagni*, the late moſt celebrated profeſſor of anatomy at *Padua*. *Mundinus* was thought to be better acquainted with the ſtructure of the lungs, than any anatomiſt before him. He underſtood the diſtribution of the nerves; and he deſcribed the *pancreatic duct*, though *Virſungus*, one of *Veſalius*'s pupils, has the honour of that diſcovery.

Arts and ſciences met with ſignal marks of royal favour and patronage in *France*, for many ſucceſſive generations: and ſince the eſtabliſhment of public lectures at *St. Côme*, for the improvement of ſurgery and anatomy, that kingdom has produced many excellent anatomiſts and ſurgeons.

About the middle of the 14th century, *Conſtantinople* was taken by *Mahomet*, who ſtudied to ſuppreſs literature, and keep his ſubjects in ignorance, from political views. Upon this revolution the *Greeks* fled, and carried their books, as their penates, to the weſt, where the plagiariſm of the *Arabians*, in reſpect to the *Greeks*, was diſcovered enough to bring them into ſome diſrepute.

Alexander

Alexander Benedictus wrote towards the concluſion of the 14th century, who made many diſcoveries, aſcribed to more modern anatomiſts.

Writers in the 15th century.

Jacobus Berengarius Carpenſis, ſometimes called *Jacobus Carpus*, was a profeſſor of great repute in the beginning of this century at *Bononia*, now *Bologna*, the moſt noted univerſity in *Italy*; and he appears to have been the firſt who publiſhed anatomical plates or figures, which were cut in wood in thoſe days, not in braſs or copper. He diſſected a great number of human bodies, and a clamour was raiſed againſt him, as againſt *Herophilus* and *Eraſiſtratus* near two thouſand years before, upon a ſuſpicion of opening ſome of them alive. The deſcription of the *papillæ renum*, given by *Maſſa*, *Fallopius*, and *Bellini*, was his. The *pellicle* in the middle of the *ſcrotum*, or *ſeptum ſcroti of Raw*, is his diſcovery; but anatomiſts ſeem not yet fully agreed concerning the diſtinct exiſtence of this part. He has accurately deſcribed the *veſiculæ ſeminales*.—It is ſaid, that he firſt knew the uſe of *argentum vivum*, in the cure of the venereal diſeaſe; by which ſecret he gained great fame and wealth.——His book

de

de Fractura Cranii is a convincing teſtimony of his chirurgical abilities.

Andreas Luccini was an eminent *Spaniſh* phyſician, educated, I think, at *Salamanca*. Anatomy very particulary engaged his attention, and he epitomiſed ſome of *Galen*'s works.

Nicolaus Maſſa has been accuſed of plagiariſm; he made but few anatomical diſcoveries, but boaſts of many.

Jacobus Guinterius was an able anatomiſt; he gave the beſt deſcription of the muſcles of any before him; and ſays he taught *Veſalius* many things.

Joannes Fernelius was a native of *Picardy*, in *France*, probably of *Amiens*, the capital of that province. He was a man of great erudition and eloquence, much admired by the learned for the elegance of his ſtyle. He was archiater to *Henry* the Second of *France*, and did great honour to his country and his profeſſion. He underſtood anatomy; it is ſaid he diſcovered the *os hyoides*; but it is deſcribed in *Galen*.

Joannes Cleander was an anatomiſt of ſome note; but wrote only about the parts of the head.

Jacobus Sylvius was an anatomiſt of the greateſt repute at *Paris*; he well deſcribed the *muſculi pyramidales*,

pyramidales, the diſcovery of which has been aſcribed to *Maſſa*.

Andreas Veſalius is to be conſidered as a great reformer of anatomy; he was the moſt celebrated man of his time, and dared to contradict the received infallibility of *Galen*. He was born at *Bruſſels*, the capital of *Brabant*, early in the 15th century; and, for a great many generations, his family had much diſtinguiſhed themſelves in the medical art. Extraordinary care was taken of his education, before he was ſent to the college at *Louvain*, where he proſecuted academical ſtudies very ſedulouſly, and acquired great knowledge of the *Grecian*, *Roman*, and *Oriental* languages; yet whilſt he was indefatigable in theſe purſuits, his native paſſion for anatomy was ever uppermoſt; even while a boy, he frequently employed his time in diſſecting dogs and other animals, as a matter of amuſement and diverſion; an early preſage of his future greatneſs in that ſcience. He viſited many univerſities, and became intimate with the moſt learned men; he diligently ſtudied phyſic, ſurgery, and anatomy, under *Jacobus Sylvius*, at *Paris*, who excelled all his contemporaries; but he himſelf publicly declared *Veſalius* excelled his maſter. Purſuing anatomical ſtudies with uncommon ardour and reſolu-

tion, he ſoon obtained the character of the greateſt proficient of his time; and his public lectures were univerſally admired. In the early part of his life, he wrote his *Encheireſis Anatomica*, which proved a good directory to ſtudents in thoſe days; the large work, that he publiſhed afterwards, is a book ſtill in great eſteem, in the plates of which, the muſcles are repreſented bold and ſwelling, reſembling life and action more than thoſe of *Euſtachius*; and conſequently, on thoſe accounts, are more admired.*

Veſalius was archiater to the emperor *Charles* the Fifth, who, for a monaſtic life, reſigned the imperial diadem to his brother *Ferdinand*, and the crown

* *Giorgio Vaſari*, in his hiſtory of the painters, ſays, that the figures of this work were drawn and engraved originally by *Giovanni Calker*, which relation is contradicted by the late doctor *Charleton*, in the preface to his Anatomical Lectures before the College of Phyſicians, wherein he expreſsly ſays, that *Lianardo Da Vinci*, a famous Italian painter, well ſkilled in anatomy, originally drew and cut the figures in *Veſalius's* books, and that he had ſeen the originals in a large folio of his in M. S. *della Pittura*, written in the Italian language, well preſerved then in her majeſty's cabinet at Whitehall; but for *Boerhaave's* and *Albinus's* fine edition of *Veſalius*, *de Corporis humani Fabrica*, the plates were engraved by the famous Dutch artiſt *Wandelaar*.

crown of *Spain* to his ſon *Philip*; and being in the greateſt degree of favour with *Philip*, and alſo in the higheſt reputation for ſkill in his profeſſion, he was called to the *Spaniſh* court; where he cured prince *Charles*, the king's ſon, of a contuſion on his head, after accurately and judiciouſly deſcribing the cauſe of his threatening ſymptoms, by dividing the *pericranium*, when the *Spaniſh* phyſicians and ſurgeons had pronounced the caſe incurable. This happy event gained him great applauſe, though, at the ſame time, it raiſed him implacable enemies in the faculty at *Madrid*, ſeeing him ſo ſignally diſtinguiſhed upon this occaſion, by the king and nobility; but whilſt he was enjoying this happineſs, under the auſpices of the king and court, having no room to envy any phyſician in *Europe*, the following diſaſtrous event ſuddenly changed the ſcene. A grandee died, his patient, and he being very deſirous of inveſtigating the obſcure cauſe of his death, begged leave of the relations to open the body, which requeſt was granted. Some of the ſpectators, who probably were not *Veſalius's* friends, declared they ſaw the heart palpitate upon his opening the *thorax*, and poſſibly a tremulous motion might proceed from preſſure upon the *vena cava*, or ſome other accidental cauſe; and ſuch a ſlight

appearance might be aggravated by thoſe ready to do him ill offices; however, their declaration ſoon reached the ears of the nobleman's relations, and raiſed a ſuſpicion that the body was opened alive; in conſequence of which he was proſecuted for homicide and impiety, and brought before the inquiſition, where the king's authority could not ſave him from the rigorous ſentence of that diabolical tribunal; but after long durance, through the mediation of the king and the united ſupplication of the court, and people in power, who were fully convinced of the injuſtice of his accuſation, his ſentence was remitted, and he obtained his liberty, upon condition of making an expiatory pilgrimage to *Jeruſalem*. From thence he was called by the *Venetian* ſenate, and invited, in the moſt earneſt and honourable manner, to go to *Padua*, then ſubject to the *Venetians*, and fill the profeſſor's chair, vacated by the death of the great *Fallopius*; but adverſe fortune ſtill purſued this illuſtrious man, who, in his return from his peregrination, to atone for a pretended crime, was wrecked upon the coaſt of *Zant*, in a deſolate part of the iſland, where, deſtitute of all ſupport, he miſerably finiſhed his life before he was full fifty years of age, a life which ſeemed to merit the peculiar indulgence of heaven. His corpſe would

would have been food for the wild beaſts, had not a perſon that knew him, happened to come by at this juncture, who, in great humanity, gave him decent burial in St. *Mary*'s church, in the city of *Zant*, erecting a tomb to his memory, with this inſcription.

Andreæ Veſalii Bruxellenſis Tumulus
Qui obiit Idibus Octobris
Anno 1564.
Ætatis vero ſuæ quinquageſimo
Quum Hieroſolymis rediiſſet.

So fell this excellent man, a ſacrifice to the tyranny of mercileſs ſuperſtition, who in his early days was remarkably diſtinguiſhed in many univerſities beſides *Louvain*, where he was originally educated; and had ſignal marks of favour conferred upon him by kings and potentates, and perſons of the higheſt character for learning; a memorable inſtance of which is the honour intended him at laſt by the noble *Venetian* ſenate.

Carolus Stephanus was a great proficient, and a member of the faculty at *Paris*. He ſays, an accident happened that kept his work from the preſs, by which means *Veſalius* anticipated him, in publiſhing ſome diſcoveries and improvements in

anatomy. He is the firſt, who diſcovered the *valves* of the *cava* and the *platyſma myoides*; and *Morgagni* gives him the honour of diſcovering the *tunica arachnoides*.

Columbus, *Euſtachius*, and *Fallopius*, were alſo great anatomiſts and rivals of *Veſalius*.

Ambroſe Paré was an ornament to the *French* nation, and ſucceſſively ſurgeon to four kings; he deſerved well of ſurgeons and anatomiſts. He was providentially preſerved in the maſſacre of the proteſtants in *France*, and died in an advanced age, in the year 1590.

Philippus, called the *Sicilian Hippocrates*, made but few diſcoveries. His works were poſthumous.

Many more anatomiſts of diſtinction might be enumerated, who lived in this age; in which alſo, till the concluſion of it, the learned in different parts of the world, were very buſy in tranſlating the *Greek* writers in phyſic into *Latin*, by which means, every thing relative to the medical art, became more univerſally known. Among the reſt, the great *Linacre*, who was phyſician to *Henry* the Eighth, tranſlated many of *Galen*'s works into *Latin*.*

Harvey

* Vid. Opera I. Friend M. D. de Hiſtoria Medicinæ, pag. 587 & ſeq.

Harvey was a famous phyſician, born at *Folkſtone*, in *Kent*, and educated at *Caius* college, in *Cambridge*; after which he ſtudied five years at *Padua*, and was phyſician to *Charles* the Firſt. He was a great benefactor to the College of Phyſicians, and died in the 80th year of his age, A. C. 1657. Thoſe who are willing to rob our countryman of the diſcovery of the circulation of the blood, ſay, that it was known to *Servetus*, *Nemeſius*, *Columbus*, *Cæſalpinus*, *Arantius*, &c. but with no valid authority. The immortal *Harvey* made this important diſcovery, and demonſtrated the fact in the year 1628. He wrote very learnedly upon this, and many other curious and uſeful ſubjects; and the anniverſary commemoration of this great genius is an honour due to his memory, which, with his own works, will prove more durable than braſs or marble.

Spaher, of *Inſpruck*, and *Remilinus*, publiſhed anatomical plates, laid one over another, which, by unfolding, were deſigned to ſhew the parts, as they riſe in diſſection. It was a work of ſome uſe, to give a general idea of anatomy; and doctor *Clopton Haveos*, author of *Oſteologia nova*, thought it deſerved his attention enough to publiſh an edition of it, with corrections and emendations: however, it is now but in little eſteem:

indeed it is very inaccurate, and not to be depended upon.

The laſt century produced many learned and ingenious anatomiſts, as *Bartholinus*, *Walæus*, *Riolanus*, *Spigelius*, *Veſlingius*, *Laurentius*, *Glandorpius*, *Lanciſius*, *Nuch*, *Steno*, *Swammerdam*, *Diemerbroeck*, *De Graaf*, *Bidloe*, *Ruyſch*, *Van Horn*, *Pecquet*, *Aſellius*, *Bellini*, *Leeuwenhoeck*, *Valſalva*, *Du Verney*, *Verheyn*, *Cowper*, *Willis*, *Wharton*, *Havers*, *Lower*, *Liſter*, *Gliſſon*, *Ridley*, and others: ſome of which treated the ſubject in general, and others in particular.——We are alſo exceedingly obliged to many celebrated men of the preſent age, who have given their attention to anatomy, and purſued it zealouſly in moſt parts of *Europe*, by which this ſcience has received great improvements; and, as anatomy is more univerſally known, and better underſtood, the world muſt conſequently have abler ſurgeons than in former ages.

OF

WOUNDS

IN GENERAL.

PART I.

IT is deſigned in the firſt part of this treatiſe, to ſhow the nature and difference of wounds, their *diagnoſis* and *prognoſis*, with the general treatment of them: and in the ſecond part, to conſider them, with their treatment, more diſtinctly, from the head, through all the cavities, including the extremities; interſperſing hiſtories of caſes, remarks, and ſhort anatomical deſcriptions, with the ſituation of the parts, in order to illuſtrate

illuſtrate the ſubject, making references occaſionally from the one part to the other.*

Boerhaave's definition of a wound is the moſt exact, and agreeable to the common acceptation of the word. He ſays, that a wound is a recent and bloody ſolution of continuity in the ſoft parts, made by a hard, ſharp inſtrument. By its character of recent and bloody, it is diſtinguiſhed from an ulcer; being in a ſoft part, it differs from a fracture; and inflicted with a hard, ſharp inſtrument, it cannot be confounded with a contuſion; but we may farther obſerve, that wounds are made by obtuſe, as well as inciſive inſtruments, and by the latter, bones may receive cuts, which, with propriety enough, may be called wounds.

The human fabric is the maſter-piece of our great Creator's works in this ſublunary world, conſequently the moſt worthy our contem-

* I could not well alter my original plan of this treatiſe laid ſome years ago, for a confined purpoſe, having then no intention of publiſhing theſe papers, which might indeed have been contracted into a narrower compaſs; but in the whole as it is, I hope it will not prove leſs inſtructive to thoſe for whom it is now expreſsly deſigned.

contemplation; and it is to be conſidered as the moſt curious *hydraulic* machine, compoſed of a ſeries of pipes or veſſels, of various kinds, and in every direction, having a wonderful connection, dependence upon, and correſpondence one with another. It appears a plexus of veſſels, with a great variety of liquors moving in them, to ſerve the different purpoſes of the animal œconomy, as far as the eye can carry us with the help of the beſt glaſſes and anatomical injections, even in the moſt ſolid parts; and we muſt admit of a vaſcular *texture ad infinitum*, beyond all ſcrutinizing, but that of our reaſon, when it ceaſes to be the object of our ſenſes, by ſuch aſſiſtance. The fluids of an animal body, by progreſſive motion and mechanical powers, are joined to, and become ſolids, in a manner beyond our comprehenſion, raiſing our admiration, and confounding our limited faculties, unequal to ſuch abſtruſe reſearches. The performance of all the actions and functions of the human body, depends on the due tone of elaſticity and energy of the veſſels, with their contained liquors of a proper fluidity and craſis circulating through them; and,

and in their regular and uninterrupted reciprocal actions, conſiſt health and ſtrength.* Hence the danger of a wound is to be conſidered and eſtimated in proportion to its ſize, the diameter of the divided veſſels, the nature of the parts wounded, *&c.* as will be ſpecified.

Superficial wounds, when well cleanſed from the blood, are perceptible to the ſight. The finger is better than any inſtrument to explore ſome kinds of wounds, not fully expoſed to view; and a bougie is preferable to the common probe, on account of it's flexibility, where the entrance is narrow, and the courſe of the wound winding, intricate, and running deep; under which circumſtances, to direct our judgment in the exploration of the wound, we are to inquire what attitude the patient was in when he received it, the ſhape of the weapon, how far it penetrated, how it was directed, with what force the blow was given, obſerving what kind of fluid is diſcharged, and every neceſſary appearance

* See profeſſor Whytt's treatiſe on vital motions, &c. and his inquiry into the cauſes of the circulation of the fluids in the very ſmall veſſels of animals.

ance and circumſtance for our information. The deliberate conſideration of theſe premiſes, joined with a good anatomical knowledge of the parts, their actions and uſes, may enable us to draw concluſions, pretty well to be depended upon, concerning the nature and character of the wound, in order to preſage it's event, and direct us to rational meaſures in the treatment of it.

Wounds are divided into claſſes, as ſimple and compound, not mortal, and mortal. A puncture or inciſion, without contuſion or other particular injury, is termed a ſimple wound; but when attended with ſuch circumſtances, it is called compound or complicated. If a part is wounded in ſuch a manner, that the circulation of the blood is ſoon put to an end, it is called a mortal wound, without exception. Wounds of the cerebellum, or which penetrate the cavities of the heart, or adjacent large veſſels, are of that claſs; and wounds of other parts, not mortal in their nature, may kill the patient, without aſſiſtance from art; though when treated ſkilfully, the danger may be averted. The effuſion of blood from a wound of any conſiderable

ſiderable artery might deſtroy the patient, were no means uſed to reſtrain it, but by compreſſion, or ligature, or ſome other expedient, in a part that can be come at, the patient's life may be preſerved. Alſo wounds coming under the denomination of not mortal, may by neglect or miſmanagement, prove of fatal conſequence. The patient's irregularity, too tight bandage, improper applications, &c. may produce direful ſymptoms in ſimple wounds, having originally no appearance of danger.

It is proper to conſider diſtinctly wounds of the common teguments, muſcles, arteries, veins, lymphatics, glands, nerves, tendons, membranes, ligaments, &c. with their various kinds, and the effects and accidents accompanying them.——The firſt difference of a wound ariſes from the kind of weapon or inſtrument, and the manner of it's making the wound, whence it receives the denomination of inciſion, puncture, or laceration.—— The ſecond difference, of uſe to be taken notice of, is the figure of the wound, as rectilinear, oblique, tranſverſe, curved, angular, or round.——The third difference is in reſpect to

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it's ſize, whether long or ſhort, deep or ſuperficial: and, when a muſcle is divided, that has an antagoniſt, there may appear a great diſtortion of the parts, and the figure of the wound be much altered by that means, which is a remark worth attention. And, under this article of the difference of wounds, we may ſubjoin the accidents belonging to them, as pain, inflammation, gangrene, extraneous bodies lodged in them, &c. all of which will be treated of in order.

Having ſhown the diſtinction and difference of wounds, we ſhall take a view of them in the different parts, beginning with thoſe of the teguments and fleſh only, proceeding regularly to the moſt complicated.

The appearances which a large ſimple wound of the teguments and fleſhy parts will have, in a young healthy perſon, when no conſiderable artery is wounded, from the beginning till the cure is completed, are theſe. In proportion as the wound deviates from a ſtrait line, or longitudinal courſe, the divided parts recede, by the natural elaſticity of animal fibres, which inſtantly ſhorten when the reſiſtance to their action is removed.——Immediately

diately after the ſeparation of the lips of the wound, an effuſion of blood enſues, which gradually ſtops as the contractile power of the retracted veſſels conſtringes their mouths, and the blood there coagulates. After this, the wound appears covered with a bloody cruſt, which is nothing but the coagulated blood, ſticking in the numberleſs mouths of the divided veſſels. Soon after a reddiſh ſerum, called gleet, which is a favourable appearance, comes trickling out; for now the mouths of the veſſels are ſo contracted in their diameters, that they cannot tranſmit mere blood. Then, in a little time, the lips of the wound become tumid, inflamed, retorted, and painful, the invariable and inevitable effects of the contraction of the mouths of the veſſels, with the obſtruction of the fluids in the adjacent veſſels, and the ſtricture the ſkin makes upon the cellular membrane; but this tumefaction of the parts, when to a moderate degree, unattended with great pain, is no unfavourable circumſtance.——Now febrile ſymptoms ſupervene, and in proportion to the pain, the velocity of the blood will be increaſed; for pain may be conſidered as the

moſt

moſt active ſtimulus to accelerate the motion of the blood, and indeed does often make it very rapid.——On the third or fourth day, pus generally begins to appear in the wound, which is deſcribed both by *Hippocrates* and *Celſus*; and when laudable, it is thick, of a yellowiſh colour, like cream, having little or no ſmell. This formation of pus is the effect of the vital action of the veſſels, by which, and the heat of the parts, when the wound is defended from the influence of the air by proper application, the effuſed fluids are concocted into the apparent homogenuous, tenacious matter, called pus; and this operation of nature is the digeſtion of the wound. When this is performed, the ſymptomatic fever and pain generally abate; after which, the inflammation and tumefaction gradually ſubſide and diſappear, as the obſtruction in the veſſels is removed, and the circulation through them becomes open, free, and eaſy. If nothing obſtructs this proceſs of nature, the vital powers and native heat will cleanſe the wound, and the extremities of the *vaſa minima* or *vaſa vaſorum*, by the impelling force of the blood, will be ſtretched out;

and when there is an addition made to them, from that fluid, the extremities of theſe protruded veſſels, elongated by little and little, give the appearance of *papillæ*.——In ſome of the new made veſſels, from all directions, forming a *plexus* or net work, I have, with a good glaſs, manifeſtly obſerved pulſations, where there has been a conſiderable loſs of ſubſtance. This generation of fleſh is called the incarnation of the wound; at the edges of which carnous ſubſtance, when incapable of farther extenſion, or checked in it's luxuriance, it hardens, forming on it's ſuperficies a blueiſh white pellicle, proceeding gradually from the circumference to the centre; and this is termed the cicatrization or ſkinning of the wound.

Having attended to the phenomena and progreſs of this wonderful operation of nature, in the generation of fleſh, of which *Galen* ſays, "*Cognoſci debet circa carnis gene-*" *rationem quod materies illius ſit ſanguis bonus*, "*Opifex vero & Author, Natura*," we may proceed to deſcribe and conſider the appearances and conſequences of wounds in particular parts of the body, beginning with

with the different kinds of wounds in a ſmall artery.

When a ſmall artery in a limb, or any external part of the body, is totally divided, it's retraction may bring it under the ſurrounding parts, and with the natural contraction of the diameter of it's mouth, aſſiſted by the compreſſive power of thoſe parts, increaſed by their growing tumid, the efflux of blood may be ſtopped; then it is to be conſidered only as a ſimple wound, as we have already deſcribed; but when ſuch an artery is not quite divided, only obliquely or tranſverſely, or even longitudinally opened, it may pour out a great quantity of blood; for when the fibres, on that ſide of it which is divided, recede from each other, thoſe on the oppoſite ſide are kept firm and fixed, conſequently the orifice of the veſſel, in whatever direction it is, enlarges under theſe circumſtances, by the impulſe of the blood. Hence we may account for profuſe *hæmorrhages*, ſometimes proceeding from ſmall wounds, where we are ſure there are no large arteries, eſpecially if the wounded veſſel lies near a bone: a remarkable inſtance of which I had from a very

eminent practitioner, of a pregnant woman who had a ſmall ſplinter of wood thruſt into her finger, which wounded an artery near the joint; in conſequence of which, ſuch an effuſion of blood enſued as threatened abortion and even her life, and was reſtrained with difficulty by the ſurgeon, when he was called to her.

If a ſmall artery is totally divided, lying contiguous to, or perforating a bone, it may be incapable of retracting and contracting, as we have deſcribed, to ſtop the flux of blood, as ſometimes happens after extracting a tooth. This conſideration may teach us to proceed cautiouſly in ſcalping, upon the authority of the great profeſſor *Monro* in his Oſteology, where we know arteries penetrate the ſkull, as they may retract ſo far, upon diviſion, as to create much trouble and difficulty in reſtraining the *hæmorrhage*.

When a ſtyptic upon lint, or ſome kind of ſoft ſubſtance, is applied on account of an *hæmorrhage* proceeding from the extraction of a tooth, the alveolus ſhould be well filled with it down to the bottom, and then ſome ſolid body of proper dimenſions uſed, adapted

to

to the ſpace, in order to make a ſtrong preſſure by ſhutting the jaw, which ſhould have a band paſs underneath it to be affixed on the top of the head, that the jaw may not be fatigued and loſe its power. This is the beſt method of making compreſſion on this occaſion, as I have experienced. The actual cautery is ſometimes neceſſary; and in ſome parts of the mouth it muſt be looked upon as the only expedient to ſtop an effuſion of blood.*

* In a diſſolved craſis of the blood, violent hæmorrhages ſometimes happen from the gums, mouth, and tongue, even without a wound. In the year 1753, I was called to a child of between ſeven and eight years of age, who had a violent hæmorrhage, in conſequence of drawing a tooth himſelf, that had been long looſe; beſides which, I obſerved an oozing of blood from every part of his gums, mouth, and tongue. The uſe of the bark with alum, joining rhubarb to them occaſionally; drinks acidulated with ſp. vitriol, and the common aſtringent topical applications; ſtrictly enjoining a proper regimen and incraſſating diet, proved his cure, though he was apparently in the moſt imminent danger. It is remarkable that this child's grandfather had all his life been ſubject to bleeding at his gums, and ſometimes profuſely. A very worthy friend of the faculty conſulted me a few years

Should not the artery be quite divided, there is a poſſibility of an aneuriſm enſuing, after the wound of the veſſel is united, becauſe the cicatrix is not ſo ſtrong as the coats of the artery, to reſiſt the impetus of the blood; which our eminent countryman *Wiſeman* tells us, happened to a butcher in *Weſtminſter*, who was wounded between the thumb and fore-finger.

Upon the total diviſion of a large artery in the extremities, the force by which the blood is ſent from the heart, overpowers the contraction of its mouth, and compreſſion from the circumjacent parts; or if ſuch a veſſel is only punctured, a fatal *hæmorrhage* may enſue, unleſs prevented by art, or the patient's fainting ſhould happily prove the means of ſaving

years ago for his own ſon, in a ſimilar caſe, though rather more threatening, as he had for a long time been ſubject to lived ſpots diſperſed univerſally in great abundance, ſhowing a higher degree of diſſolution of his blood; yet he was cured by the ſame treatment.—I remember ſeeing, many years ago, a man of an advanced age, who had ſuch a conſtant oozing of blood from his gums and ſides of his mouth, as proved too obſtinate for the ſkill and utmoſt endeavours of a very able phyſician and ſurgeon.

ſaving his life; under which circumſtance, the inadvertent or incautious uſe of cordials, with a view of reviving the patient, might prove his deſtruction.

When the brachial or femoral artery is wounded, though the patient ſhould not periſh by the *hæmorrhage*, the limb muſt ſoon die for want of nouriſhment. In this caſe, the progreſs to putrefaction will be very ſwift, attended with an emphyſema of the cellular membrane, occaſioned by an expanſion of rarefied air from cell to cell: and the limb being deprived of the regular influx of the vital fluid, the nerves, giving ſenſation and motion, loſe their energy and influence. A wound of this kind generally requires immediate amputation, and to be performed at the part wounded; but if the brachial artery is wounded near the axilla, or the axillary, it is neceſſary to take the limb off at the joint; yet, as there are inſtances of the brachial artery dividing into two, ſoon after it leaves the axilla, which *luſus naturæ* I have obſerved at different diſtances in the arm, it will be rational practice, when we feel a pulſation at the wriſt, to treat a caſe ſo circumſtanced as an

aneuryſm, as we ſhall hereafter direct. I lately ſaw the ſame kind of *luſus naturæ* upon the thigh, in an amputation about the middle, on account of a *ſpina ventoſa*. The branches of the artery ran parallel, at the diſtance of near an inch, and I could not diſcover any difference in their ſize. What practical uſe or inference is to be drawn from this remark, I leave to the reflection of ſurgeons, as it may not be altogether unworthy their attention.*

The great apprehenſion of danger from an *hæmorrhage*, in conſequence of amputating the arm at the ſhoulder, has proved a diſcouragement to the practice; but I am convinced, that compreſſion by an appropriate machine, having a well adapted compreſs, applied upon the little pectoral muſcle juſt beneath the clavicle, where the artery paſſes into the axilla, and acted upon by a ſcrew regulating the degree of preſſure by feeling the pulſe at the

* Vid. de Haen de aneuryſmatibus, in parte ſeptima Rat. Medendi.

He there relates a memorable cure of an aneuryſm opened in the thigh, at the hoſpital in Vienna, where he was phyſician,

the wriſt, will effectually anſwer the purpoſe. This I have demonſtrated long ago to many of my brethren; and I am in no doubt of being able to ſtop the current of the blood in that manner, with the aſſiſtance of the thumb and fingers of my other hand upon it, long enough without being fatigued, for the operation to be performed; the operator leaving, as is directed, the muſcles, between which the brachial artery runs, to be divided laſt, when it may be as eaſily taken up by the needle and ligature, as after any other amputation, without being ſubject to the inconveniences attending the methods propoſed by *Heiſter* and others in this important point.—For want of ſome ſuch compreſſive means, I ſaw a very dexterous operator meet with great trouble and difficulty, by chuſing firſt of all to make inciſion between the muſcles, in order to convey a ligature above the artery alone, which circumſtance prolonged the operation a great while, and had he not been as intrepid as judicious, it might have diſconcerted him very much: however, it ſucceeded happily. What made this operation neceſſary was an inveterate ulcer, accompanied

nied with a caries of the bones in the joint, which had reduced the patient exceedingly, and had brought her life into imminent danger.*

The following operation may here be juſt taken notice of, though it is highly probable it will rarely, if ever, be attempted.

The members of the Royal Academy at *Paris*, propoſed to the conſideration of ſurgeons, a few years ago, in their prize-queſtion, the expediency or practicableneſs of amputating the thigh at the joint. Though it might appear too enterpriſing for a ſurgeon to attempt ſuch an operation, yet, I think, the queſtion demands regard; for ſuppoſing that the femoral artery, juſt below *Poupart's* ligament,

* See Monſr. La Faye's method of performing this operation, in the ſecond vol. of the Mem. of the Royal Academy of Surgery. He has diſtinguiſhed himſelf very much by his notes upon Dionis's operations in ſurgery.—Monſ. Le Dran, a very eminent ſurgeon at Paris, ſays his father was the firſt who performed it. To this excellent practitioner and writer, my worthy friend Mr. Gataker, ſurgeon extraordinary to his majeſty, &c. has done juſtice, in his tranſlation of his operations in ſurgery: and in his own compoſitions we find great purity of ſtyle as well as judgment in his profeſſion.

ligament, under which it paſſes out of the *abdomen*, ſhould be wounded, or ſome incurable accident happen to the joint, if in a thin, healthy ſubject, would it not be worth our deliberate conſideration and attention, joining in conſultation the ableſt and moſt experienced of our brethren, that could be convened upon ſuch an exigence? *Celſus's* rule is: "*Anceps remedium potius quam* "*nullum.*' And it certainly becomes the character of a ſurgeon to be neither raſh nor timorous. But in an incurable *caries* of the bones of the joint, there appears but little encouragement to expect ſucceſs ſhould attend this operation, for very obvious reaſons.

Boerhaave mentions a very remarkable caſe of a peaſant near *Leyden*, who had the axillary artery totally divided with a knife, upon which accident a great effuſion of blood enſued, and the patient fainted. The mouth of the veſſel retracted ſo far, that it was impracticable to come at it with a ligature, or ſtop the *hæmorrhage* by any other means; and in this ſad and hopeleſs condition, the poor man was abandoned to his fate. He

continued

continued ſeveral days in a languid ſtate, apparently ready to expire every moment, in which nature performed what his ſurgeons could not, by cloſing up the mouth of the divided artery. The arm decayed, and gradually ſhrunk and dried, becoming at length a rigid piece of mummy, which he carried about a long while.

I was deſired a few years ago, by a ſurgeon, to attend a patient with him, who had juſt before been thrown out of a cart by its overturning, when he was inebriated to ſuch a degree that he had entirely loſt his ſenſes. The wheel of the cart paſſed over the top of his arm and ſhoulder, contuſing thoſe parts very much quite to his neck; and at this juncture an iron hook, belonging to the cart, entered between the *biceps* and *coracobrachialis*, making a large lacerated wound, including the *faſciculus* of nerves which take that courſe. The limb was wholly deprived of ſenſation and motion, and finding no pulſation at the wriſt, we concluded the *brachial* artery was divided; but the *hæmorrhage*, which at firſt was very profuſe, was ſtopped by the retraction of the veſſel, and having

the

the arm confined to the ſide. Had not the drunken condition the patient was in, and the violent contuſion of the parts ſurrounding the joint, diſcouraged us, we ſhould have thought it right to have propoſed immediate amputation of the arm at the joint; but under ſuch forbidding circumſtances, it appeared too raſh and dangerous an attempt. The accident happened in the evening, and till the morning following, there was a conſiderable degree of heat diffuſed throughout the limb, which next morning, in different parts, began to appear diſcoloured, emphyſematous, and gangrenous; by noon it was totally dead to the fingers end, and the patient expired that day about ſix in the evening. Next morning we examined the limb, found the artery quite divided, having the ſuperior end retracted into the *axilla*, and ſeparated more than an inch from the inferior; and it then evidently appeared to us, that the hook had included and injured the bundle of nerves, as there was reaſon to believe at firſt. In this ſhort ſpace of time, the limb was become ſo putrid, that we could not bear to ſtand over it, to make the neceſſary examination,

till

till the ſtench was corrected, by well waſhing it with warm vinegar and brandy.

Wounds of the arteries naturally lead us to ſay a word or two concerning *aneuryſms*.

When one or two of the three coats of an artery are wounded, and the wound healed, the other, by the propulſion of the blood, may be gradually dilated and protruded, ſo as to form a bag. Under theſe conditions, the pulſation will be plainly felt in the tumour, till it is increaſed to a conſiderable magnitude, in which the blood may ſometimes acquire by ſubaction, a laminated, leathery ſubſtance, as it frequently does in the true *aneuryſm*, from the gluten of the blood. The tumour, in conſequence of ſuch a partial wound, is ſmall in the beginning, and generally makes a ſlow progreſs; whilſt it is of a ſmall ſize, the blood remaining in a ſtate of fluidity, may be forced into the artery, but it will return as ſoon as the preſſure is removed, the tumour appearing again. In this ſtate the ſkin commonly retains its natural colour, but afterwards, when the tumour is enlarged, it often has a duſkiſh red or livid hue. The kind of wound now under conſideration,

tion, produces a mixed ſpecies of *aneuryſm*, compounded of the true, which is a dilatation of all the coats of an artery, and of the falſe, by having one or more of them wounded. It is a caſe that rarely occurs, but may happen in bleeding.

As a dilatation of the artery alone conſtitutes the true *aneuryſm*, the tumour is generally more oblong than in the mixed kind, and both muſt neceſſarily be more circumſcribed than the falſe, proceeding from a perforation of all the coats of that veſſel; under which circumſtance the blood, in a ſhort time, is frequently diffuſed far about. In this caſe the ſmall apertures of the teguments cloſing, the blood may readily eſcape out of the artery, inſinuating itſelf into the cellular membrane and interſtices of the muſcles, ſometimes raiſing a ſwelling in the parts quickly, turning the ſkin of a ruddy or livid colour. This tumour increaſes faſter or ſlower, according to the reſiſtance the blood meets with; it yields but little to preſſure, ſcarce any pulſation is to be felt, when of any conſiderable duration or ſize, and, unleſs ſeaſonably prevented, the limb will be brought

brought into imminent danger. This accident has often happened by bleeding in the lower vein of the arm, called the *baſilic*, where the pulſation of the adjacent artery is conſpicuous in ſome arms: and it has been obſerved by accurate anatomiſts, that when the brachial artery divides before it approaches the joint, the ulnar and radial branches of it run more ſuperficially, than when the diviſion is at, or juſt below the joint as uſual.

As a ſpurious or falſe *aneuryſm*, as this is termed, may proceed from an internal cauſe, as acrid matter eroding the coats of the artery; ſo may a true one ariſe from a contuſion, or rather external injury, weakening them and making them liable to diſtention, by the impulſe of the blood.*

When

* Theſe authorities may be conſulted among others, in reſpect to the various kinds of *aneuryſms*.

Wiſeman's obſervations upon *aneuryſms*.——*Macgill's* hiſtory of an *aneuryſm*, and profeſſor *Monro's* remarks upon that ſubject, concerning the formation of an *aneuryſm*; Med. Eſſ. vol. 2.——Doctor *Hunter's* obſervations upon the ſame ſubject, in the *London* Med. Obs. and Inqs. vol. I. II.——Mr. *Warner's* obſervations on two femoral

When veins are wounded, the blood does not flow with that impetuoſity and ſaltation, as when proceeding from an artery, but in an equal ſtream; nor is venal blood ſo florid as arterial, which is alſo a mark of diſtinction to be conſidered in theſe wounds.

When the *lymphatics* are wounded, they diſcharge a fluid reſembling water, which ſometimes becomes acrid, eroding the neighbouring parts. It often proves troubleſome

femoral *aneuryſms*, in the third edition of his very uſeful Caſes in Surgery.——*Mem. de l'Acad. roy. de Chirurgie.*—*De Haen de Aneuryſmatibus Rat. Med.*——*Morgagni de Sedibus & Cauſis Morborum.*——*Marcus Aurelius Severinus, de efficaci Medicina.*—*Lanciſius de Motu Cordis, & Aneuryſmatibus.*——*Fernelius, Marchetti, & Ruyſch*, ſpeak of having obſerved enlargements of the ventricles of the heart; which was alſo found to be the caſe of his late Majeſty, attended with a rupture of the right ventricle, whence proceeded his ſudden death,——Doctor *Hunter* ſhows in his anatomical courſes ſeveral *aneuryſmal aortæ*, accompanied with caries of the ribs and *ſternum.*——*Ruyſch* has obſerved the like.——What Doctor *Friend* has written concerning *aneuryſms* in his hiſtory of phyſic, where he treats of the ſurgery of *Paulus Ægineta*, claims an attentive reading.——Alſo ſee what Doctor *Donald Monro* ſays upon *aneuryſms*, in the Eſſays phyſical and literary of the *Edinburgh* Society, vol. 3.

to ſtop the diſcharge from theſe fine pellucid tubes, which now and then happen to be divided in bleeding, without any fault in the operator, or poſſibility of avoiding them, as they cannot be diſcerned when they accompany the vein, lying in the way of the lancet. I have met with an accident of this nature three or four times.

Wounds of the glands are not generally attended with threatening ſymptoms; but they are rather more diſpoſed, from the texture of the parts, to produce ill-conditioned fungous fleſh, and the diviſion of their lymphatics or excretory ducts, may make the cure prove tedious and troubleſome, as I have obſerved, on account of a large watery diſcharge, that ſometimes enſues; and, according to the reſpective uſes of the fluids, which the glands ſecern, the animal œconomy may ſuffer by their being wounded.

When a nerve is punctured, or divided only in part, a variety of alarming ſymptoms generally ſupervene, in proportion to the tenſeneſs of it, and firmneſs of the parts it is attached to; and it is not unreaſonable to ſuppoſe there may be ſomething conſtitutional,

tional, in the production of the ſymptoms, to a greater or leſs degree, as there is a manifeſt difference of irritability and ſenſibility in different perſons. When a nerve happens to be partially divided, the undivided fibres having its whole contractile force to ſuſtain, it muſt conſequently be more irritated, and attended with a greater degree of pain, which ſenſation ſometimes is not ſo violent at firſt, as to demand particular notice, though at other times it is, and often extremely acute; throwing the whole nervous ſyſtem immediately into diſorder, requiring a total diviſion of the nerve to appeaſe the orgaſm. In a total ſeparation of a conſiderable nerve, though the ſymptoms will be leſs ſevere under that circumſtance, yet more pain may be felt above, at ſome diſtance from the wound, than in the wound itſelf, from a divulſion of the fibrils of the reſilient part of the nerve: and ſhould a principal branch be divided, the inferior parts that were ſupplied from it, having loſt their communication with the brain, will be deprived of ſenſation and motion; by which, nutrition will alſo be impaired; the nervous influence being found

neceſſary to that purpoſe. Though the wound itſelf may deceive the eye, and have the reſemblance of a ſimple wound, the ſymptoms, ſooner or later, will declare what part has ſuffered: and ſometimes a corroſive ichor iſſues from the wound, excoriating the part it falls upon. Obſtructions in the capillary veſſels, creeping along the membranes, which envelop the nerves, or that are ramified in the univerſal connecting ſubſtance, the *membrana celluloſa*, may ſoon occaſion an inflammation in thoſe parts. Theſe concurring cauſes may be productive of direful effects; as intenſe pain, fever, inflammation, gangrene, delirium, and convulſions, ſoon bringing the limb into danger, and death may cloſe the diſmal ſcene, unleſs prevented by the utmoſt care and early attention. *Hippocrates*, *Pare*, and other obſervators, ancient and modern, relate many fatal conſequences from wounds on the nerves.

When a tendon is punctured, almoſt the ſame formidable ſymptoms may follow, as in the puncture of a nerve, and they have often been the conſequence of bleeding, from wounding the tendon of the biceps muſcle, or perhaps

more

more frequently, the tendinous expanſion of that muſcle, which goes off from the tendon in a narrow compaſs, juſt below the bend of the arm, under the median vein, ſoon expanding over the muſcles of the cubit, bracing them together to aſſiſt their action. Sometimes, upon this accident, the pain does not come on immediately to an intenſe degree, but gradually extends upwards, according to the courſe of the muſcle, and of the tendinous expanſion downwards, attended with tenſion and inflammation, depriving the arm of flexion, or of both flexion and extenſion.* When the tendon is partially divided, the wound is accompanied with more pain, than when totally ſeparated; for the ſame reaſons, as aſſigned in conſequence of wounds of the nerves. Should the tendon be quite cut

 through,

* When the king of *France* had a tendon punctured in bleeding, *Paré* ſays he inſtantly complained of pain upon the entrance of the lancet, and his whole arm ſwelled immediately, and became very painful; yet it was happily cured in three weeks, by the common treatment, under the direction of that eminent and experienced ſurgeon.——In this caſe, ſemi flexure is the proper poſition to keep the limb in, the muſcles being then in a ſtate of relaxation.

through, by the contraction of the muſcle, of which it is a part, the end neareſt it, if it is a long muſcle, will be far retracted under the adjacent parts, and the muſcle loſe its uſe till the wound is healed, when, by means of the intermediate ſubſtance, furniſhed by nature, by the aſſiſtance of art, as we ſhall ſhow hereafter, the power of the muſcle may be reſtored.

The ſymptoms attending wounds of the membranes, and ligaments, ſurrounding the joints, have great affinity to thoſe accompanying wounds of the nerves and tendons. *Hippocrates* tells us of two perſons, who died convulſed from ſuch wounds of their feet. Many other melancholy inſtances might be mentioned, upon good authority; ſome I have ſeen. We may conſult that truly great and experienced practitioner, ſerjeant *Wiſeman*, upon this occaſion.

Though the tendons, membranes, and ligaments have but little ſenſibility in a ſound ſtate, yet when wounded, and become inflamed, they grow moſt exquiſitely ſenſible and painful, as daily experience evinces.—— Baron *Haller's* treatiſe of irritability and ſenſibility,

ſibility rather tends to miſlead practitioners;* but in order to obviate ſuch inconveniences, as might ariſe from implicit faith, in what he therein advances, as he is one of the greateſt phyſiologiſts of the age, the late profeſſor *Whytt's* anſwer to that treatiſe ſhould be read by all means.

Baron *Haller* was profeſſor of phyſic, &c. at *Gottingen*, and *Whytt* a very eminent profeſſor at *Edinburgh*. The baron retired to *Bern*, in *Switzerland*, upon his Britannic majeſty's *German* dominions becoming the ſeat of war, where he wrote a voluminous phyſiological work; and was alſo engaged in the ſtate as well as in his profeſſion.

OF

PROGNOSTICS

IN

WOUNDS.

NOTHING more truly diſtinguiſhes a rational, regular, experienced practitioner from a quack, than his making a right prognoſtic, or prediction of the event of a diſeaſe. This kind of foreſight makes him looked upon as a ſort of prophet, and does him great honour; but then it is neceſſary for him to proceed very cautiouſly, leſt he ſhould err in his judgment, in a point of ſuch conſequence to his character. *Hippocrates* ſeemed to be truly ſenſible of this, when he expreſſed himſelf thus. "Whoever would "aſk pertinent queſtions, and anſwer judici-"ouſly thoſe propoſed, refuting objections as "much as poſſible, muſt well conſider the "cauſe

" cauſe of the diſeaſe, what reaſon there is " to believe it will have a good or bad event, " be of long or ſhort duration; and, in " wounds, whether they will prove mortal " or not; which are of good, and which of " bad preſage, which doubtful in their ſuc- " ceſs; and whether the uſe of the limb " will be preſerved or not, &c." Or as *Celſus* has it more conciſely. " Above all, " a ſurgeon ought to know what wounds are " curable, what are eaſy, and what difficult " to cure."

From the venerable authorities of antiquity, we ſee it was expected that ſurgeons, in thoſe days, ſhould pronounce whether the patient would recover or not; whether the cure would be eaſy or difficult; if it would prove a ſhort or tedious work; if it would be a perfect or imperfect cure; in what condition he might be afterwards, or what infirmity or diſeaſe might remain; and leſs cannot be required in theſe modern and more enlightened times. However, as few people are endowed with fortitude of mind enough, to bear unfavourable predictions, without being too much affected, the prudent ſurgeon will

will therefore act with great circumſpection on this occaſion, and rather acquaint the patient's relations or friends, with the danger he apprehends him in, as the moſt effectual means of guarding againſt cenſure; giving the patient reaſonable hopes at the ſame time, which may prove the beſt cordials to the afflicted.

In order to regulate our judgment in prognoſtication, we muſt conſider what wounds are mortal, and what not, with the various ſpecies of them. Thoſe deemed mortal, as we have obſerved in the general diviſion, are either ſuch as cannot be cured by art, or ſuch, as left to themſelves, would certainly deſtroy the patients, yet, by the aſſiſtance of a ſkilful hand, may be cured. It is a matter of great difficulty and nicety, to preſage the patient's fate; for we have ſurpriſing accounts tranſmitted to us, and well authenticated, of the recovery of perſons, without the leaſt proſpect of a favourable event; and our own obſervation and experience will confirm it. *Hippocrates* pronounces the doom of thoſe, who are wounded in the brain, medulla ſpinalis, heart, liver, diaphragm, bladder, and lungs,

lungs, when more air comes out of the wound than enters the lungs by the trachea; he alſo ranks wounds of the large veſſels of the lungs, and of the neck, and large tranſverſe wounds of the ſtomach and inteſtines, among thoſe of a mortal nature, but ſays, when ſmall and longitudinal in the ſtomach and inteſtines, ſome may eſcape.* *Celſus* agrees with *Hippocrates*, adding ſome ſpecifications, in reſpect to the wounded parts; but their ſentiments concerning the mortality of wounds admit of farther conſideration.—*Boerhaave's* manner of determining this important point is more methodical than any other; he divides mortal wounds into five diſtinct claſſes; the firſt is when the influx of the *liquidum nervoſum*, or other nervous influence, whatever it is, operating upon the heart, on which its motion depends, is obſtructed, and which impediment may ariſe from four cauſes.†

The

* In Coacis Prænotionibus.

† As we know, by obſervation, the effects of injuries done to the brain and nerves, it is to no purpoſe in ſurgery to embrace any hypotheſis or doctrine concerning thoſe parts. The greateſt philoſophers and phyſiologiſts are

The wounds that more immediately produce this fatal effect, are thoſe of the *cerebellum*, or *medulla oblongata*, between which there is a ſtrict and mutual communication, and whence nerves are diſtributed to the heart, and other parts upon which vital action depends. I believe we have not an inſtance upon record, of a perſon recovering a wound in thoſe parts; but wounds of the brain itſelf have been cured, even when a conſiderable quantity of it has been evacuated, upon the authority of the beſt obſervators, as we ſhall particularly mention hereafter.

The

are divided in their opinions; ſome are advocates for animal ſpirits, or the nervous fluid; others for vibration, conſidering the nerves as elaſtic cords; and ſome admit of electrical fire, collected by the body, making the nerves the conductors of it, to carry on the wonderful communication and intelligence, which we obſerve between them and the brain, the body and the mind; but this abſtruſe ſubject ſeems now no better underſtood than it was in the great *Steno's* time, who, in his lecture upon the brain, makes a beautiful and ingenious confeſſion of ignorance, in reſpect to the nature and operation of that curious organ, which perhaps will ever remain beyond the comprehenſion of man's underſtanding.—*Nemo ſcit quantum neſcit.*

The ſecond cauſe that may deprive the heart of the nervous influence and motion, is a preſſure upon the brain itſelf, by a depreſſion of the ſkull, or from ſome other cauſe. The lodgement of blood or other fluid may eaſily affect the brain by compreſſion, as it uniformly fills its boney caſe; or by ſtimulus or eroſion, as they are apt to become putrid and acrid by heat and confinement, producing, ſooner or later, fatal effects. *Hildanus*, *Tulpius*, *Bohnius*, *Schenkius*, and other obſervators, furniſh us with a variety of caſes to this purpoſe: aud innumerable inſtances might be produced, of extravaſations on the ſuperior parts of the enveloping membranes of the brain, cured by trepanning, and evacuating the ſtagnant fluid.

The third cauſe that interrupts the nervous influence upon the heart, is a wound in the ſuperior part of the *medulla ſpinalis*; becauſe the *medulla oblongata*, *cerebrum*, and *cerebellum*, have an intimate connexion. It is common in anatomical experiments, in order to kill the animal inſtantly, to thruſt in a ſharp inſtrument between the *vertebræ* near the head; and *Sennertus* ſpeaks of a butcher that uſed

uſed to kill his beaſts in that manner.* For the moſt part, injuries done to the inferior parts of the *ſpinal* marrow prove mortal, as we learn from *Tulpius*, *Bohnius*, and others; at leaſt the lower extremities become paralytic, as I have ſeen.

The fourth cauſe of the ceſſation of the motion of the heart, for want of a nervous influence, proceeds from the *cardiac* nerves being wounded; but it is ſcarce poſſible, that theſe nerves ſhould be wounded, without opening blood-veſſels, the conſequence of which alone would be death inevitably.†

The ſecond claſs of abſolutely deadly wounds conſiſts of thoſe, which penetrate either the *auricles*, or *ventricles*, of the heart, allowing a paſſage for the blood to flow out of it; for the continual motion of the heart hinders *reunion*; and even in ſuperficial wounds, when the blood falls into the *pexi-*

cardium

* The Sardinian butchers ſhow their humanity, in killing their beaſts with unerring dexterity, by dividing the ſpinal marrow at one ſtab, between the firſt and ſecond vertebræ of the neck, as I have been informed by a gentleman who had been in the iſland, and obſerved that was the practice at Turin.

† Vid. Lower de Corde.

cardium and cannot get out, the heart being compreſſed by that means, a ſtop will ſoon be put to its motion, and a period to life, which is confirmed by many writers, as *Foreſtus*, *Schenkius*, *Bohnius*, *Bartholine*, *Blegny*, *Diemerbroeck*, *Bonetus*, *Vidus Videus*, *Paré*, *Horſtius*; and many obſervations to the ſame pupoſe are to be met with in the *Miſcellanea curioſa*.*

In the third claſs of wounds of a mortal nature, are included thoſe inflicted in parts that cannot poſſibly have applications made, to reſtrain the effuſion of blood; as deep wounds in the lungs, &c. having large veſſels opened, of which we have examples in *Timæus*, *Bohnius*, &c. There are inſtances of the recovery of patients of wounds in the lungs, recorded by *Stalpart Vander Wiel*, *Schenkius*, and others: and it has ſometimes happened, that conſiderable pieces of the lungs

* Upon the authority of *Bartholine*, *Schenkius*, and others, we have inſtances of perſons living, walking, and ſpeaking, for a ſhort time, after receiving a wound penetrating one or both ventricles of the heart. And it is well known, from experiments, that ſome animals will live and move a long while after taking out their hearts.

lungs have been cut off, yet the patients have recovered, as we may read in *Hildanus*, *Tulpius*, and *Ruyſch*, who tied a ligature about the protruded part before exciſion of it, in order to prevent *hæmorrhage*.*

Large wounds in the liver are a kin to thoſe in the lungs, and the branches of the *vena cava*, or *portarum*, are followed with like fatal conſequences, when wounded, as attend opening the *pulmonary* veſſels, which may be obſerved in *Timæus*, *Schenkius*, *Bohnius*, &c. Smaller ones of this part have been cured, as we may learn from thoſe authors; and we have a remarkable hiſtory of a wound in this bowel, related by *Hildanus*, in his epiſtle to *Sennertus*, which ended happily.

The ſpleen has the largeſt arteries, in proportion to its ſize, of any *viſcus* in the body, except the heart, and through its middle runs

* When the great general *Wolfe* fell, and left much to fame, at the taking of *Quebec*, it was currently reported that another brave officer, who accompanied him in that expedition, was ſhot through the *thorax*, and had the wound cured, after cutting off a piece of the lungs, protruded in a mortified ſtate.

runs a *ſinus venoſus*; therefore, when they are opened, wounds of the ſpleen are to be deemed mortal; yet we have reaſon to believe, there is a poſſibility of preſerving the patient's life, by a total exciſion of it, as was verified a few years ago, in the caſe of one of ſir *Robert Rich's* dragoons, who was wounded at the battle of *Dettingen*, and left all night in the field weltering in his blood, with the ſpleen hanging out of his body, in a mortified ſtate: next morning he was carried to the ſurgeon, who immediately extirpated it, after tying a ligature round the large veſſels; and the patient recovered to be able to do duty in the regiment. Doctor *Monro*, phyſician to St. *George's* hoſpital, told me, he had the hiſtory of this remarkable caſe from the ſurgeon himſelf, who is a man of great veracity.——This operation has been frequently performed upon dogs, by way of experiment, and they have ſurvived with but little apparent detriment to their healths, or their vital or animal functions, except growing rather fat and lazy afterwards.—— *Foreſtus*, *Purmannus*, *Bohnius*, *Schenkius*, &c.

may be conſulted concerning wounds of the ſpleen.*

Wounds of the kidnies may be arranged in the ſame claſs, becauſe of the large emulgent arteries and veins; and the urine, running out of the wound when it happens to penetrate the *pelvis* of the kidney, may prove an obſtacle to its coalition: however, ſome wounds of the kidnies have been cured, as we ſee in *Fallopius*, *Foreſtus*, and other authentic writers; and I have been a witneſs of the ſame. We have the extraordinary caſe of conſul *Hobſon*, at *Venice*, handed down to us, upon whom *nephrotomy* was ſucceſsfully performed

* Though *Democritus* and others have looked upon the ſpleen as an uſeleſs part, yet, conſidering the large blood-veſſels belonging to it, &c. we may more reaſonably conclude, with other phyſiologiſts, that it muſt be an organ of much conſequence in the animal œconomy, though they are not agreed about its uſe.——See doctor *Stukeley's* learned lecture, called the *Gulſtonian* lecture, read in the theatre of the College of Phyſicians, upon this *viſcus*, in the year 1722; at whoſe requeſt it was printed.—To this excellent lecture is prefixed, the much admired pindaric ode upon the ſpleen, by the late counteſs of *Winchelſea*.

performed by the celebrated *Marchetti*, profeſſor of medicine at *Padua*.*

Wounds of the *pancreas* are to be concluded mortal, if its *duct* or blood-veſſels are injured, whence the *ſuccus pancreaticus*, or blood, may be diſcharged into the cavity of the *abdomen*, and there putrefying, cauſe inevitable death; beſides, as the ſituation of the *pancreas* is under the ſtomach, it cannot eaſily be wounded, without the weapon's paſſing through this organ alſo.

Wounds of the *omentum* are of the mortal kind; for *that* having conſiderable ramifications of veſſels upon it, which may be divided by the thruſt of a ſword, or other weapon, the effuſed blood falling into the cavity of the *abdomen*, will kill the patient, unleſs it be evacuated by ſome means, or taken up by abſorption.

Wounds of the *meſentery* generally prove mortal. This part is full of *glands* and *lympha-*

* It is not improbable, that *Marchetti* might be directed in this operation by a tumour upon the *lumbar* region. The wound was not perfectly healed, but only a ſmall fiſtulous opening remained, diſcharging a very little matter, having an urinous ſmell.

tics, and furniſhed with arteries and veins in abundance, running to and from the *inteſtines*, with collateral veſſels diſperſed in it; upon cutting of which, ſuch an effuſion of blood will enſue, as may ſoon deſtroy the patient, by filling the cavity of the *abdomen*. *Bohnius* relates ſome remarkable caſes of this ſort. And wounds in this part may prove mortal, independent of any other cauſe than the *meſenteric* nerves being injured, which have a great influence upon reſpiration, and the vital functions.

Wounds of the ſtomach and inteſtines come under the ſame denomination, they being plentifully ſupplied with conſiderable blood-veſſels, eſpecially the ſtomach; but there are many inſtances upon record, of wounds in theſe parts having been cured: thoſe in the large inteſtines are not ſo dangerous, as wounds in the ſtomach and ſmall inteſtines. The *periſtaltic* motion of theſe parts is a great impediment to healing of theſe wounds; and the nerves ſuffering may alſo be attended with very bad conſequences. More will be ſaid to this purpoſe, under that

claſs.

claſs of wounds, which deprive the body of nutrition.

The *uterus*, in a virgin ſtate, is ſmall, and never after geſtation returns to its original ſize; but when impregnated and diſtended, the blood-veſſels enlarge in proportion, and wounds in it become more and more dangerous on account of the *hæmorrhage*; for the veſſels in an unimpregnated ſtate of the *uterus*, that will ſcarce admit of a briſtle, will be dilated to the ſize of a ſwan's quill, or more, before delivery; and ſhould the *uterus* then be wounded, a fatal effuſion of blood would probably enſue, occaſioned by diſtention of the part with the *fœtus*, preventing its contraction, neceſſary to cloſe the mouths of the veſſels; but if the excluſion of the *fœtus* happens ſoon after the wound is inflicted, there is reaſon to hope the contraction of the *uterus* ſhould conſtringe the patent veſſels, and prevent a mortal *hæmorrhage*, from what has been obſerved in the ſucceſs of the *cæſarian* operation.

Wounds of the bladder have been pronounced mortal, and incapable of healing, by *Hippocrates* and other ancient writers, ſup-

poſing it to be an exanguious part; but daily experience proves the contrary, in cutting for the ſtone. There is danger of a profuſe or mortal *hæmorrhage* in accidental wounds, upon dividing ſome conſiderable branches of the *iliac* arteries running along the neck of the bladder, which ſometimes cannot be eaſily come at with a ligature, nor the *hæmorrhage* ſtopped by any other means. We may read what *Bohnius*, *Fallopius*, *Tulpius*, *Schenkius*, &c. ſay upon wounds of this part.*

Wounds of the *aorta* are equally as mortal, as thoſe that penetrate the ventricles of the heart; and we cannot heſitate to pronounce the ſame fate will attend thoſe who have the *ſubclavian*, *vertebral*, or *carotid* arteries opened, where we cannot have acceſs to them. When the *carotid* is opened in the middle of the neck, by a large longitudinal wound, or if ſmall, when properly enlarged, there may be a poſſibility of conveying ligatures above and

* I once knew a fatal *hæmorrhage* in conſequence of lithotomy, that happened a few hours after the operation, which was well performed, and without any difficulty or effuſion of blood in it worth notice, that could not be ſtopped by the utmoſt care of two able ſurgeons.

and below the aperture, which may prove the means of ſaving the patient's life; or ſhould it be opened too near the head to put this method in practice, it may be worth while to try what preſſure, upon ſome ſoft fungous ſubſtance, or upon an *eſcharotic*, will do; having a ſucceſſion of underſtanding aſſiſtants, if they can be procured upon ſuch an emergency, to relieve each other, and maintain a due and regular compreſſion with their fingers, as long as ſhould be found neceſſary, though it ſhould be ſome days and nights; and, to make the force the more equable, ſome ſolid body, well adapted, ſhould be placed next the compreſs. It is better for the ſurgeon's own ſake to try theſe doubtful means, rather than ſuffer the patient to periſh without any attempt to ſave him, even though they ſhould prove fruitleſs. Any other large branches of the *aorta*, that cannot be come at, as the *meſenterics*, *epigaſtrics*, *hypograſtics*, &c. when wounded, will prove fatal; and nothing leſs is to be feared from wounds of the large veins, as the *venæ cavæ*, *vena port. ſubclavians*, &c. for they will ſoon

pour out more blood than the patient can bear, without loſs of life.*

In the fourth claſs of wounds which neceſſarily prove mortal, are thoſe that entirely ſtop reſpiration; which may happen ſeveral ways, as by a diviſion of the *larynx*; by large wounds of the *trachea* or *bronchia*; by wounds penetrating both cavities of the *thorax*; and wounds of the *diaphragm* generally are attended with no happier event. If the *trachea* is quite divided near the *clavicles*, and the lower part of it retracted beneath them, by the natural power of the part and the weight of the lungs, there is no poſſibility of bringing the ends of the divided part together, con-

* In diſſecting out a large encyſted tumour, deeply ſituated in a dog's neck, that was a very ungovernable patient, I wounded the *carotid* artery, which bled with great impetuoſity; but I effectually reſtrained the *hæmorrhage* by paſſing a ligature as directed, and cured my patient; who ever after retained an angry remembrance of the operation, and would not be reconciled to me.

It is a memorable and melancholy hiſtory that *Boerhaave* relates of a young man, who had a ſword thruſt through his neck between the fourth and fifth *vertebra*, by which the *vertebral* arteries were divided, and lived nine or ten days either in a *ſyncope* or *hæmorrhage*.

conſequently ſuch a wound muſt prove mortal; but when it is divided near the middle of the throat, it is not abſolutely incurable.—Profeſſor *Monro* inſtances the caſe of a lunatic, who cut his own throat in ſuch a manner, that no air paſſed by the mouth, yet the parts were brought together and ſtitched, and the wound healed. *Tulpius* relates a ſimilar caſe. *Bartholine* and *Paré* have ſome ſuch. *Van Swieten* and *Heiſter* mention caſes, where part of the *trachea* was carried away with a ball, the patients recovering by proper treatment.——Theſe happy events ſhould encourage *bronchotomy*, upon urgent occaſions, when the patient is in immediate danger of ſuffocation, as it is an operation neither difficult to perform nor dangerous.*

Large wounds of the *bronchia*, which are the diviſions or branches of the *trachea*, or *aſpera arteria*, will produce fatal effects, and it is ſcarce poſſible, that they ſhould be wounded, and blood-veſſels in the lungs eſcape. We may recollect what was ſaid before from *Hippocrates*, who includes thoſe of the

* See des playes du larynx & de la trachée, &c. en Mem. de l'Acad. Roy. de Chirurg. tom. 1.

the lungs among mortal wounds, when more air paſſes out through the aperture, than enters them through the *glottis*, or *rimula* of the *larynx*. If there is a large opening on each ſide, into the cavity of the *thorax*, the air ruſhing in at once, will balance that within the lungs; conſequently they will be left to their own contractile force, and collapſe and compreſs their blood-veſſels, obſtruct the circulation, and cauſe ſuffocation and death. It was to this collapſion of the lungs, upon paſſing the air into both ſides of the *thorax*, though none of the *viſcera* or blood-veſſels ſuffered, that the phyſicans in the *Act. medic. Berolin.* attributed the death of a man, who was wounded by a broad ſword through the *mediaſtinum*.*

As the *diaphragm* is one of the principal agents in reſpiration, wounds in it muſt be attended

* *Veſalius* uſed to demonſtrate this fact in his anatomical lectures, by firſt opening one ſide of the *thorax* of a pig, by which that lobe of the lungs left off playing, then doing the ſame on the other ſide, the animal would ſoon have expired; but by ſucking out the air, and ſhutting up the apertures, death might be prevented.—Read the experiments of doctor *Houſtoun* and others in Comment. *Van Swiet.* in Aphoriſm. *Boerhaavii* § 170.

attended with imminent danger, though not always mortal. Small wounds in the fleſhy parts of this compound muſcle have been cured, as we may obſerve in *Diemerbroeck*, *Schenkius*, and others; but wounds in the tendinous parts of it are deemed incurable. The abdominal *viſcera*, which are conſtantly expoſed to a conſiderable preſſure, may be forced through wounds of this part into the *thorax*, as *Paré*, *Sennertus*, and others teſtify. The diviſion of the *phrenic* nerve may deſtroy the action of the *diaphragm*, and alſo immediately affect the motion of the heart, which receives branches from it.

The fifth and laſt claſs of wounds, that art cannot cure, are ſuch as deprive the body of nutrition, by preventing the paſſage of the food into the ſtomach, the preparation of chyle, and the conveyance of it into the blood; which we ſhall conſider in order, according to the courſe of the aliment.

1. When the *æſophagus*, or canal by which the food paſſes into the ſtomach, is totally divided, its ends recede from each other, and cannot be kept together; conſequently death muſt inevitably enſue: and the effect will be

the

the ſame, when a large wound, particularly a tranſverſe one, happens in it, after its entrance into the *thorax*; but when not totally divided, before it enters that cavity, it has been cured. We have many hiſtories of ſuch cures having been performed from *Peyerus*, *Bohnius*, *Schenkius*, &c. and ſome ſuch inſtances might be produced of our own knowledge. Profeſſor *Monro* gives a narrative of a perſon, who cut his own throat, ſo that the aliment paſſed out at the wound, before it was ſtitched and dreſt, and he was in great danger of being ſuffocated, by its falling into a correſponding wound in the *trachea*, notwithſtanding the utmoſt endeavours to prevent it; yet he recovered, by the obſervance of an exact regimen, diet, &c. as we ſhall direct hereafter, in the method of cure.——*Benedictus Bonacurtius* ſays he cured a perſon, who cut his own throat in priſon, making a large wound both in the *trachea* and *œſophagus*.*

2. Wounds

* See Diſſertation *par Monſ. Verdier en Mem. de l'Acad. Roy. de Chirurg.* tom. 3, in which are contained the opinions of many great men, beſides his own, upon this ſubject;

2. Wounds of the ſtomach are of a mortal nature, by allowing the aliment to fall into the *abdomen*, by deſtroying its function and depriving the body of nouriſhment; but the more immediate danger lies in dividing the blood-veſſels and nerves, which are diſtributed upon it in great plenty; and ſometimes a wound in this organ cauſes ſudden death, as we learn from *Hippocrates*, *Foreſtus*, *Timæus*, and others.——*Crollius* tells a ſtory of a *Bohemian* peaſant, who uſed wantonly to conceal a knife in his throat, ſo as no body could ſee it: however, at laſt this trick had like to have proved fatal to him; the knife ſlipt into his ſtomach, and after ſome weeks, being felt outwardly, an inciſion was made, through which it was extracted, and the wound healed.——*Jeſſenus* has recorded a memorable hiſtory of a man at *Prague*, who ſwallowed a knife, which made its own way through the ſtomach and *abdomen* ſome weeks after, and ſays, that he recovered. He alſo ſays,

ſubject; as *Galen*, *Paré*, *Tulpius*, *Veſalius*, *Bartholinus*, *Stalpart Vander Wiel*, *Palfin*, *Saviard*, *Dionis*, and his excellent commentator *La Faye*, *De la Motte*, *Garengeot*, *Ferrein*, &c.

ſays, he ſaw a man, belonging to the court at *Paris*, who voided a knife at the groin, nine months after it was ſwallowed.——*Laurentius Joubertus* relates a caſe of this nature, where a knife remained two years in the patient's body.——*Diemerbroeck* gives a more ſurpriſing hiſtory of ſuch a caſe; and the knife, which is ten inches long, was extracted after cutting upon it, and is kept among the rarities in the anatomy chamber at *Leyden*, with the teſtimonial of the magiſtrates, &c. of the city of *Koningſburgh*, to that univerſity, verifying the fact, and the patient's recovery.* As there are, beſides theſe, more inſtances, well atteſted, of large wounds in the ſtomach having been cured, as we ſhall mention hereafter, in the method of treating wounds in this

* This operation was performed in the preſence of a great many phyſicians, ſurgeons, and others, by doctor *Daniel Schwaben*, a famous phyſician, ſurgeon, and anatomiſt: and for performing ſucceſsfully ſuch a wonderful operation, he was appointed ſurgeon in ordinary to the king of *Poland*, and had ſignal honour conferred upon him and his family, by royal mandate. The hiſtory of this caſe was publiſhed at large by doctor *Daniel Becher*, profeſſor of phyſic in the univerſity of *Koningſburgh*, and chief phyſician to *Uladiſlaus* then king of *Poland*.

this part, they are not to be deemed abſolutely mortal.

3. A total diviſion of the ſmall inteſtines, is to be looked upon as a mortal wound, by ſuffering their contents to be diſcharged into the cavity of the *abdomen*; by which, death muſt neceſſarily enſue, unleſs the ends can be brought into contact and ſtitched together, or the ſuperior end can be made to grow to the margin of the wound of the teguments, by ſtitching, or any other expedient; for by this means an opening may be preſerved for the exit of the inteſtinal contents, promoted by the periſtaltic motion; but even in that caſe, ſhould the diviſion of the inteſtine be near the ſtomach, chyle would be wanting for nutrition of the body, and the wound in conſequence end fatally. In wounds, whether tranverſe or longitudinal, in theſe parts, when not totally divided, if they can be conveniently come at, ſtitching is adviſable, as we ſhall direct in the treatment of them, in wounds of the *abdomen* and its contents.

4. Wounds of the large inteſtines, where the canal is, or is not, totally divided, are not

not ſo dangerous as thoſe in the ſmall inteſtines, for very evident reaſons; but we have inſtances in writers, and from our own obſervation, of the happy event of wounds in both parts. —— The caſe recorded in the Philoſophical Tranſactions, by Mr. *Needham*, an eminent phyſician at *North-Walſham*, in *Norfolk*, is very pertinent and ſingular.

5. Wounds of the *receptaculum chyli*, and *ductus thoracicus*, muſt be conſidered as mortal, except under the circumſtance, that will be ſpecified hereafter, in the treatment of them, by depriving the body of nutrition;* conſequently life cannot long ſubſiſt: beſides, theſe parts eſſentially neceſſary to life are ſo ſituated, that it is hardly poſſible they ſhould be wounded, without ſome other principal parts ſuffering alſo.†

OF

* *Vid. Walæum, Lowerum & profeſſorem celeberrimum Deleboe Sylvium, de Motu Chyli.*

† See the great profeſſor *Munro's* deſcription of the *receptaculum chyli & ductus thoracicus* at the end of the 5th edition of his *Oſteology*, &c.

OF SUCH WOUNDS AS WHEN LEFT TO THEMSELVES MAY PROVE MORTAL, THOUGH NOT SO IN THEIR OWN NATURE.

NOW we are to conſider the ſecond ſort of mortal wounds, or thoſe, which, left to themſelves, without aſſiſtance from art, would inevitably kill the patient, but with it, may be cured.

1. Wounds of the head, attended with an extravaſation of blood, or lymph, upon the *encephalon*, or a depreſſion of the ſkull, &c. oppreſſing the brain, are of this nature; and, were no means uſed, would probably kill the patient; yet, by the application of the trepan, the impending danger may be averted; as we ſhall ſhow, when we come to treat of wounds of this part.

2. Wounds of large arteries and veins, which the ſurgeon can come at, are of this claſs.

3. Wounds of the *viſcera*, to which hand and medicine can be applied, are to be brought under this head; as for example, ſuppoſe a

wound inflicted with a cutting inſtrument upon the *abdomen*, and a wounded inteſtine preſents itſelf, by ſewing it together it may be cured, but without ſuch treatment, the *fæces* will ſlip into the cavity, and the patient neceſſarily periſh.

4. When extravaſated fluids are contained in any of the three cavities, they would infallibly occaſion death, without evacuation of them; as by the trepan, when in the head; by the operation directed in the *empyema*, when in the *thorax*; and by *paracenteſis*, when contained in the *abdomen:* for ſuch fluids, particularly when in the *thorax* or *abdomen*, by the warmth and agitation of the parts, ſoon become putrid and acrid, producing dreadful ſymptoms, as we frequently obſerve. Whenever abſorption happens, it muſt be before they have loſt their natural fluidity.

Wounds, curable in their own nature, may have fatal events, from a variety of cauſes; as through a neglect in extracting extraneous bodies, or diſcharging ſtagnant fluids, putrid or tending to putrefaction, eſpecially when lodged in, or near, vital parts.

parts. A hectic fever and maraſmus may be produced by the abſorption of putrid matter; and we have many inſtances of patients who died tabid from that cauſe. *Varicola*, *Tulpius*, *Foreſtus*, *Bohnius*, and others, mention ſuch unhappy caſes.

2. Errors and irregularities in the non-naturals, as air, meat and drink, ſleep and watching, motion and reſt, retention and excretion, and paſſions of the mind, often prove deſtructive in their conſequences; of which there are innumerable hiſtorical facts, admoniſhing us to pay the utmoſt regard to them, in the cure of wounds; as we ſhall ſhow under thoſe heads.

3. The patient may ſuffer irretrievably by error of judgment, or practice, or through the ſurgeon's negligence. Miſtakes, not to be remedied, may be committed by the ableſt practitioners, through inadvertence or inattention; and we have a very memorable example to this purpoſe, where *Hippocrates* took a *fiſſure* of the ſkull for a *ſuture*; in conſequence of which miſtake, trepanning was omitted, till it was too late to ſave the patient's life; but that great and good man in-

genuouſly confeſſed his error.*——A mortification, and other ill effects, may ariſe from too ſtrait a bandage; of which I was once a witneſs, in a ſimple fracture of the leg, where a dreadful mortification was occaſioned by it, and the patient's life and limb were ſaved with great difficulty. A caſe, more remarkable than this, fell under my care a few years ago, ſhowing unſkilfulneſs in another reſpect. A gentleman's ſon, about twelve years of age, diſcharging a ſmall braſs gun overloaded, the breech-pin, about 3-4ths of an inch long, flew out, and penetrated the upper eye-lid, paſſing between the globe of the eye and the orbit, down to the botom. He was immediately carried to a pretender to ſurgery, who inadvertently ſtitched the wound, with this extraneous body in it, treating it, in other reſpects, very improperly;

* *Bentius* ſpeaks of a ſoldier, in whoſe caſe a ſurgeon took an unuſual continuation of the *ſagittal future*, through the middle of the *os frontis*, for a *fiſſure*; and and though the patient was at length cured, under his inſpection and ſuperintendence, yet the ſteps that had been taken, in conſequence of the miſtake, occaſioned a ſeparation of that bone at the *coronal future*, and its coming away in two parts.

perly; in conſequence of which, pain, inflammation, &c. enſued, and occaſioned my being called next day. After cutting the ſtitches, I diſcovered, by the probe, this foreign body, and when I had carefully enlarged the wound, extracted it, and by eaſy and gentle treatment, as our art directs, the wound was ſpeedily healed; but it was a coſiderable time before he regained uſeful ſight. The whole eye ſuſtained a violent ſhock, the pupil remained much dilated a long while, and though its figure is ſtill oblong, yet he can ſee to read.*——*Paré* tells us he was ſent for to a ſoldier, that had a large penetrating wound of the *thorax* ſtitched, and that upon cutting the ſtitches, a great quantity of putrid blood flowed out, after removing ſome that was concreted at the mouth of the wound, by which means he ſaved the patient.——*Hildanus* mentions two caſes, where the patients ſuffered by corroſive applications. And the caſe of *Thrinon*, the ſon of *Damon*, related by *Hippocrates*, in his Epidemics, who was ſeized with an *opiſthotonos*,

* I have lately ſeen this young gentleman, and find the pupil has recovered its circularity.

and ſoon died, in conſequence of ſuch an application to a nervous part, is a very ſtriking and pertinent example to this purpoſe.—— *Boerhaave* gives a narration of a young gentleman's caſe, who received a wound in the radial artery, wherein the ſurgeon uſed a cauſtic application to reſtrain the *hæmorrhage*; and which made ſuch ravage in the adjacent parts, that the median artery was eroded; whence proceeded ſuch an effuſion of blood, as killed the patient. He alſo inſtances the caſe of a perſon, who had the artery that runs between the *tibia* and *fibula* divided, in which attempts were made to ſtop the bleeding, by compreſſion and bandage, without effect, and the patient bled to death. In both theſe caſes, had the tourniquet been uſed, the wounds dilated, and the arteries tied, the patients might have been ſaved; or perhaps, after a ſufficient dilation of the wounds, to come at the mouths of the bleeding veſſels, proper ſtyptics, with ſtrong compreſſion, without circular bandage which would obſtruct the refluent blood, might have had the deſired effect.——A ſurgeon of my acquaintance, deſervedly in high reputation,

tion, told me he had been concerned for a man, who had one of the arteries that run between the *tibia* and *fibula* opened about the middle of the leg, with the point of a ſcythe; and that the limb was amputated, he not being able to reſtrain the great effuſion of blood. In this caſe, as every other attempt had failed, would it not have been practicable and adviſable, after application of the tourniquet, to have diſſected the muſcles from the *fibula*, then to have paſſed under it ſome well adapted thin inſtrument to raiſe it up by, and keep it ſteady, ſawing a portion of it off with a fine, proper ſaw, in order to have come at the bleeding veſſel? It appears to me this might have been done, without any very great difficulty, and with a ſtrong probability of ſucceſs.

4. Wounds may prove mortal in a bad conſtitution, that would be eaſily cured in a good habit of body, or ſtate of health. They may be attended with fatal conſequences, in hydropic, cacochymic, ſcorbutic, venereal, or conſumptive caſes, where the *vis vitæ* is weak, and the fluids thin and acrid.

THE METHOD OF MAKING A PROGNOSIS IN WOUNDS.

AFTER having deliberately conſidered theſe ſpecifications in the *diagnoſis*, we ſhall be little at a loſs in the *prognoſis*. 1. We are to attend to the figure of the wound. A ſtrait wound is better than that which is curved or angular, becauſe the lips of it are more eaſily brought together, and kept in contact or proximity; and we need not ſay, that a ſuperficial one requires leſs time to cure than that which is deep, or with loſs of ſubſtance; when deep, and ſo ſituated that the matter has not a free depending exit, the cure proves difficult and troubleſome, for obvious reaſons, requiring a counter opening. 2. We muſt conſider the nature of the part wounded; and the nearer the wound is to vital parts, ſo much the more dangerous. When arteries, tendons, or nerves, are hurt, the *prognoſis* is plain, from the anatomical knowledge of the wounded parts. Wounds of the joints are difficult to cure, and gene-

rally

rally attended with worſe accidents than in other parts of the limbs, on account of their being ſurrounded with tendons and membranes. If a wound happens in any part, that is in conſtant motion, as the *thorax* and *abdomen*, in reſpiration, *that* may prove, in ſome degree, an obſtacle to its cure. 3. We muſt have regard to other accidents and ſymptoms that may attend wounds; as *hæmorrhages*, extraneous bodies lodged in them, coagula of blood, poiſon, ſplinters of bones, contuſion, pain, inflammation, fever, ſyncope, convulſions, palſies, apoplexies, &c. and according to theſe contingences, of which we ſhall particularly treat, the danger is to be eſtimated and determined.

We are next to bring under conſideration, the patient's age and conſtitution, general ſtate of health, what diſeaſe he is affected with, or whether he is addicted to exceſs of any kind or not; for a healthy, temperate young perſon, whoſe blood is in a ſoft balſamic ſtate, is much eaſier cured than the old and infirm; or one whoſe conſtitution is injured by intemperance, or that is afflicted with ſome diſorder, which, independent of

any

any other cauſe, might have brought him to his grave, as we have before hinted: and wounds ſo circumſtanced, may fruſtrate the moſt judicious and rational methods of cure. Beſides, we are to have reſpect to the ſeaſon of the year; for ſummer's ſcorching heats, and more eſpecially ſultry weather, with an humid air, are apt to bring on an inflammation, fever, large ſuppurations, a greater degree of putreſcence and acrimony in the matter, and other bad conſequences, proceeding from corruption and depravity of the blood and humours.

Having well weighed all theſe circumſtances, nothing remains as to the *prognoſis*, but to ſpeak to the event, or what inconvenience the patient will ſuffer, after the wound is healed; which, may be deduced from the premiſes. The conſequences of dividing a principal artery in a limb will be a mortification; the diviſion of a principal nerve will cauſe an inſenſibility, immobility, and atrophy of the limb; the ſeparation of a tendon will be attended with the loſs of motion, which depends upon the action of the muſcle, to which it belongs; a wound in the

medulla

medulla ſpinalis will occaſion a palſy, or mortification, of the inferior parts; an immoderate ſuppuration, in a very large, deep wound, by abſorption of the putrid matter, may end in a hectic fever and *maraſmus*; a great loſs of blood endangers a dropſy; for the ſolids, by that means, become ſo weak and inelaſtic, that they cannot duly elaborate the new *ingeſta*, or well perform, what the ancients called the ſecond concoction, which is chylification, conſequently the chyle muſt be left crude, and ill prepared for ſanguification, and the various purpoſes of the animal œconomy.——If a wound penetrates the *thorax* and lungs, a *phthiſis pulmonalis* may enſue; and happening in any other conſiderable organ, an ulcer may remain, proving the fomes of a hectic and conſumptive diſorder.——It is unneceſſary to mention more particulars to this purpoſe; for after reflecting upon what has been ſaid, and being well acquainted with the ſtructure of the human frame, and the laws of the animal œconomy, any perſon may be a competent judge in theſe matters; but no one can without thoſe qualifications.——*Anatomy*, *phyſiology*, *ætiology*, and *pathology*,

pathology, being ſo evidently requiſite to enable the ſurgeon to make prognoſtics to his credit, as well as to cure his patient, as has been already intimated, no farther exhortation to the attainment of them is neceſſary.

OF THE INTENTIONS IN THE CURE OF WOUNDS.

THE three following intentions are to be anſwered in curing wounds; and when any extraneous bodies are lodged in them, they muſt firſt be removed, as will be particularly directed, in the accidents attending wounds.

The firſt intention belongs to inciſed wounds, and is performed by bringing their lips, as much as poſſible, into contact or proximity, keeping them ſo till they be united; which is called healing by *ſymphyſis*, or the firſt intention.

The ſecond intention is accompliſhed, by promoting digeſtion, and regeneration of the loſs of ſubſtance; which is termed curing by *ſyſſarcoſis*, or by the ſecond intention.

The

The third intention is covering the wound, whether inciſed or otherwiſe, with ſkin, which is called *cicatrization*.

OF SYMPHYSIS.

AUTHORS generally begin to teach the cure of wounds by *ſymphyſis*; but, conſidering there is always ſome ſupply of new matter, the ſecond intention, called *ſyſſarcoſis*, is neceſſary to be underſtood, before we can be well acquainted with the firſt, and have true and clear ideas of it. *Symphyſis*, according to its definition or etymology, is that branch of ſurgery, as we have ſaid, which teaches us to bring parts ſeparated into contact or approximation, and unite them; for which purpoſe we muſt endeavour, as much as poſſible, to obtain an exact coaptation of them, after cleanſing the wound from blood, &c. with a ſpunge and warm wine and water, or ſome ſuch liquor, and then keep them in juxtapoſition, till the fibrils, &c. ſhooting out from each ſide of the wound, and interwoven as deſcribed in the appearances of a ſimple wound,

wound, become firm and of one ſubſtance; which we may obſerve is a kind of *ſyſſarcoſis*, or incarnation. It is to be remembered, that this intention is practicable only in recent inciſed wounds; and when we have made a good and regular coaptation of their lips, we muſt endeavour to keep them as much in contact as we can, by bandage or ſuture, or both together; and we ſhall ſhow their ſubſervience, when we deſcribe them, and their uſes. This kind of wound, that the union of the parts may not be interrupted, is to be ſeldom dreſſed; and its dreſſing ſhould conſiſt of agglutinants, or ſuch kind of applications, as is leaſt apt to produce *pus*, avoiding all unctuous things. Though ſtitching of wounds with the needle is not ſo much practiſed as it was formerly, and what is called the dry ſuture, more frequently uſed, yet the needle and thread will be found abſolutely neceſſary in ſome caſes, as we ſhall demonſtrate.

Syſſarcoſis, or the ſecond intention in the cure of wounds, is the wonderful operation of nature, manifeſted in the elongation and diſtention of the *vaſa minima*, with the appoſition

poſition of proper materials from the blood, for the formation of new veſſels, as has been deſcribed: and both ſolids and fluids muſt be in a good condition, or the *vaſcular compages* at the bottom of the wound, &c. called the incarnation, will prove either too compact, or looſe and luxuriant; therefore, though *ſyſſarcoſis* is, properly ſpeaking, the work of nature, we ſee it is the ſurgeon's buſineſs, to aſſiſt her in it, that ſhe may not be obſtructed; and this aſſiſtance muſt be given, by endeavouring to preſerve the veſſels in a proper tone or elaſticity, to prepare and circulate the fluids for the generation of the loſt ſubſtance; which is to be effected by ſuitable dreſſings, to prevent putrefaction in the wound itſelf; at the ſame time obſerving other rules, eſſentially neceſſary to be regarded, in dangerous wounds; as we ſhall ſhew in their reſpective places.

After directing the management of the wound itſelf, we ſhall deſcribe the moſt convenient and uſeful bandages and ſutures; then treat of the accidents or ſymptoms appertaining to wounds; and among them, introduce the manner of extracting extraneous

bodies,

bodies, concluding this firſt part with the non-naturals; all which appear of much conſequence to be well attended to.

In order to cure large wounds, either with or without loſs of ſubſtance, we ſhould dreſs as expeditiouſly as we can; as the acceſs of the air is apt to contract the veſſels in their tender ſtate, and coagulate the fluids, obſtructing nature's operation. Hence it follows, that we ſhould remove the dreſſings no oftener, than is neceſſary to prevent the matter from becoming acrimonious, or its being abſorbed into the maſs of blood, where there is a large quantity of it made in deep wounds. This doctrine *Cæſar Magatus* and *Belloſte* have taken great pains to eſtabliſh; who, like moſt authors, fond of their own opinions, have carried the matter rather too far. *Celſus* adviſes opening the wound every third day; *Fabricius ab Aquapendente* every third or fourth day; but there are no rules preciſely to determine this point, which muſt be regulated by the judgment and experience of the ſurgeon, from circumſtances and appearances. The general rule may be to dreſs, when the patient is

ſenſible

ſenſible of a diſagreeable itching about the part; but the ſtandard for dreſſing is once in twenty-four hours, which is agreeable to the practice of the hoſpitals. This rule will certainly hold good, in moſt caſes, and it is ſupported by the authority of the beſt and moſt experienced practitioners of theſe days. It is true indeed, what *Fabricius ab Aquapendente*, who was one of the ableſt ſurgeons of his time, juſtly obſerves, that the patient may think himſelf neglected, when ſeldom dreſt, obliging the ſurgeon to dreſs him more frequently, though perhaps to his own prejudice; but this point muſt be left to the ſurgeon's diſcretion.*

* See two diſſertations, one by Monſ. *le Cat*, the other by an anonymous author, *en Rec. des Pieces pour le Prix de l'Acad. Roy. de Chirurg.* tom. 1. *Sur les Panſemens rares ou frequens.*——I believe none of the prize pieces of the Royal Academy of Surgery at *Paris* are yet tranſlated, which are excellent diſſertations upon various ſubjects; therefore it is to be wiſhed they were, for the ſake of thoſe who do not read *French*; or rather, it is to be wiſhed, that all ſtudents in ſurgery would make themſelves acquainted with the *French* tongue; for very often it is a long while before a good book in that language upon this ſubject is tranſlated: and then the tranſlators,

The only applications, generally neceſſary at firſt, are fine, even, dry lint, with a pledget of ſoft tow or linen cloth, ſpread with the common digeſtive, or *ceratum album*, or *unguentum ſimplex*; which dreſſing ſhould not be removed, till it can be very eaſily taken off; but the compreſs and bandage proper to be applied, may be changed, ſhould the gleet prove large and offenſive. Upon the removal of the firſt dreſſing, digeſtives are to be uſed, as *unguent. baſilic. flav. unguent. e gum. elemi*, with the addition of *balſam e copaib.* or ſome other natural balſam, or fine, pure turpentine, occaſionally, which are the beſt of digeſtives. A variety of compoſitions for this purpoſe, are to be met with in practical writers; the nature and conſiſtence of which muſt be altered, according to circumſtances, and the nature and diſpoſition of the wound. Theſe applications are to be made cold or warm, as the ſeaſon of the year and appearance

lators, ſometimes not underſtanding the ſcience, though they do the language, their tranſlations prove faulty and defective, as may be obſerved in the tranſlation of Monſ. *Petit's* excellent work *des Maladies des Os*, and others.

pearance of the wound ſhall direct, upon ſoft even pledgets of lint, which ſhould be ſo applied, that the extremities of the veſſels may be gently compreſſed; the wound muſt by no means be filled with hard doſſils, or have a tent forced into it; for by ſuch treatment the veſſels would be ſo much compreſſed, as to hinder their ſtretching out, obſtructing nature in the work of regeneration: alſo dreſſing the wound in ſuch an irrational manner, with tents and hard doſſils, prevents a free diſcharge of the matter, irritates the ſenſible parts, and bruiſes the tender, new-made veſſels; whence often proceed obſtructions, inflammation, pain, fever, &c. We need only conſult *Cæſar Magatus*, *Wiſeman*, and *Belloſte*, to be convinced of theſe facts, if our own experience and obſervation have not ſufficiently confirmed us in that belief, and ſhown the abſurdity of a practice, now almoſt univerſally exploded; and which can never be beneficial, but upon very particular occaſions, which muſt be left to the ſurgeon's diſcretion.*

* See two diſſertations, one by Monſ. *Le Cat*, the other by an anonymous writer, in anſwer to the prize queſtion,

It is proper, after application of the pledgets, to cover the part with a plaſter of *cerat. alb. unguent. tripharm.* or common plaſter, which may be of uſe in keeping out the air, and in promoting the concoction of the matter, by preſerving native heat in the wound; then eaſy compreſs and bandage complete the dreſſings, which require to be adapted and applied ſo as not to excite pain, or obſtruct, in any degree, the circulation of the blood; for ſtrait bandage would be as productive of evils, as tents and hard doſſils. After dreſſing, we are to conſider how to place the part or member, in the moſt eaſy and convenient ſituation or poſture; remembering that pain not only obſtructs the cure, but is in itſelf a dreadful evil, and to be avoided by all poſſible means that can be thought of.

When we are about to renew the dreſſing, we ſhould take care to have all the *apparatus* ready, in neat and good order, before we remove the old; that we may not be obliged to

queſtion, propoſed by the Royal Academy of Surgery, at *Paris*, for the year 1733. *Quels ſont, ſelon les diſferens cas, les avantages & les inconveniens de l'uſage des tentes & autres dilatans?*

to expoſe the wound to the air, whilſt any thing neceſſary be preparing, that has through inadvertence been omitted. We are then to take off the dreſſings, as gently as poſſible, concealing, as much as we can, every diſagreeable object from the patient's ſight; the matter is to be wiped off with ſoft cloth, tow, or lint; for rough treatment not only cauſes pain, but breaks off the tender fibrils, or ſprouting extremities of the veſſels, hindering the incarnation of the wound. The beſt thing for this purpoſe is a piece of the fineſt ſponge, expreſſed out of warm water, with a little wine or brandy added to it, which, by moderate preſſure upon a ſuperficial wound or ulcer, abſorbs the matter at once in the eaſieſt manner. We ſhould perform the dreſſing, in all reſpects, as expeditiouſly and neatly as poſſible, leaving the part in the poſition directed: and when there are ſeveral wounds, we ſhould never uncover them all at once, but always dreſs one, before we expoſe another. An attention to theſe circumſtances will have a farther good effect; it will prove the means of ingratiating

the ſurgeon into the patient's favour, whoſe care and tenderneſs will not paſs unregarded: and, by gaining his confidence and good opinion of us, his mind will be kept in more eaſe and tranquillity; which is a matter of no ſmall conſideration, as we have obſerved in the introduction.

The bloody *ſerum*, called *ſanies* or gleet, which wounds diſcharge at firſt, is ſometimes immoderate, fetid, and of a blackiſh colour, and ſo acrimonious, as to erode the ſkin; the contuſed fibres often look like a ſlough, the ſwelled and obſtructed veſſels giving the appearance of filling up the wound with fleſh; but it may be diſtinguiſhed from good fleſh, this being firm and florid, the other ſoft and pale; and muſt be ſuppreſſed or removed, by ſome means, to lay the foundation for healing. The parts ſhould be defended againſt excoriation, with plaſters of ſome proper cerate, and the putrid, fetid ſcent, corrected, by ſprinkling lavender-water and vinegar, or ſome ſuch fragrant antiputreſcent liquor upon the bandage, &c. All theſe circumſtances demand

mand particular notice and conſideration, eſpecially with nice and delicate patients.*

Having conſidered the management of a wound, to which we had eaſy acceſs, for the application of medicines, and from whence the matter was freely diſcharged, it is proper to give ſome directions concerning the treatment of a deep wound, with a ſmall external orifice, where there is danger of a collection of matter, that cannot readily be evacuated. In this caſe, it is neceſſary to make an enlargement of the opening by inciſion; and when the ſituation of the wound is ſuch, that the matter cannot have a free egreſs, a depending opening ſhould be obtained if poſſible; as for example, ſuppoſe a wound

 inflicted

* In ſuch a putrid, gleeting ſtate of a wound, whether after any conſiderable operation or otherwiſe, nothing is ſo efficacious as the *bark* with *elix. vitrioli*, when no circumſtances forbid the uſe of it.——In a looſe, flabby ſtate of a wound or ulcer, I have ſeen great advantage from the uſe of a decoction prepared with *cort. peruvian. & fol. jugland.* adding a little ſugar and *tinct. myrrhæ*, dreſſing them with lint moiſtened in it, and applied moderately warm. Or this, ℞. *aq. calcis* ℔ *ſs tinct. cort. peruv.* ʒ *ii tinct. myrrhæ* ʒ *j m.* To which I have ſometimes added *aq. vitriolic. camphorat.*

inflicted in the leg, deſcending a good way down, without the weapon's piercing outwardly below, we may firſt attempt, by expulſive compreſs and bandage, to preſs up the matter, in order to be diſcharged at the orifice, for which purpoſe, a plaſter compreſs is the moſt proper, with a piece of thin ſheet-lead, ſuch as tea comes home in, put into the middle of it, as it will not be apt to ſlip from its fixed place, and will make due reſiſtance: but if the end cannot be effected by this method, and the lower part of the wound is near enough the external teguments, it is adviſable to make an opening there, without delay; applying a compreſs above, and allowing the ſuperior orifice to cloſe. This depending opening is to be made, by introducing a probe or other convenient inſtrument, cutting upon it with a knife or lancet; or by an inſtrument invented by Monſ. *Petit*, which anſwers the purpoſe better on ſome occaſions; it is deſcribed by *Heiſter* in his Syſtem of Surgery, Pl. 4. with his improvements upon it. After making an opening in this manner, in the moſt depending part, and ſufficiently dilating it, we ſometimes

ſometimes find it neceſſary to draw a ſeton through, from the ſuperior to the inferior orifice, continuing the uſe of it for ſome time, or to inject with a ſmall ivory ſyringe, or drop in ſome kind of vulnerary abſterſive medicine, ſuch as the balſam, p. 139, in order to bring the parts into a diſpoſition to admit of union by compreſſion, or to fill it up with good fleſh.

Cicatrization is the intention, as we have ſaid, that finiſhes the cure, about which we ſhould be particularly careful, eſpecially when the wound happens to be upon a part that is expoſed to view. The main point to effect the purpoſe of leaving a fair and ſmooth cicatrix, in healing a wound with great loſs of ſubſtance, depends on the former part of the treatment, in filling the wound up with good and ſound fleſh, and that to an equal height, or very nearly level with the adjacent ſkin: when the incarnation is ſo far advanced, the wound may be cicatrized, with dry lint and moderate compreſſion, or with *cerat. epulotic.* ſuppreſſing any luxuriancy of fleſh occaſionally, with gentle touches of *lap. vitriol.* or *cauſt. lunare*, till the cicatrization

trization is completed. Of all wounds, burns require the moſt care to induce a ſeemly cicatrix.

Sometimes the new-made ſkin will have veſications ariſe upon it, eſpecially where there has been a great loſs of ſubſtance, till that and the regenerated fleſh is perfectly organized, to admit of a free and uninterrupted courſe of the fluids through the vaſcular *compages*; which veſications are to be opened, as ſoon as they appear, to prevent eroſion by the matter contained in them, and then dreſſed after the common manner with *cerate* alone, or mixed with a little digeſtive, by which means they will ſoon be healed.

OF APPLICATIONS USED TO ANSWER THE DIFFERENT INTENTIONS IN CURING WOUNDS.

THE medicines called digeſtives, which have alſo a deterſive quality, and may, with propriety enough, have the appellation of incarnatives given them, are ſuch as we have already mentioned, as *unguent. baſilic. flav. unguent. e gum. elemi*, &c. When a ſoft balſam is thought neceſſary, either in deep, or other wounds, this may be uſed, of which I have long experienced the good effects.

℞. *Vini alb. generos.*
Ol. Olivar. optim. a. ℥ *iv*
coq. ad conſumptionem dimidii dein add.
Unguent. e Gum. Elemi
Balſam. e Copaib. veri a. ℥ *j. m.*
& col. & in phiala, lato ore, ſervetur.

This balſam is very convenient to be added occaſionally to the above-mentioned digeſtives, when it is required to have them of a ſofter conſiſtence; and exceedingly well adapted to paſs into deep wounds, or to dip ſetons

ſetons into, when uſed as directed, after making counter openings. Sometimes I add a portion of *tinct. myrrhæ* to it, which by ſhaking, incorporates well with it. *Unguent. baſilic. viride* is a good detergent. *Tinct. myrrhæ & aloës* is much commended by ſome. *Merc. præcip. rub. benè. lævigat.* is often uſed either alone, or in compoſition with the digeſtive, and generally obſerved to meliorate the matter when thin and ſanious.—— Deſiccative applications are of various kinds, as *cerat. epulotic. cerat. ſaturnin.* &c. concerning which, practical writers may be conſulted.——Corroſives and eſcharotics, uſed in deſtroying fungous fleſh, are *alum.* and *vitriol. uſt. vitriol. roman. cauſt. lunare, lap. infernal.* &c. but by beginning early to dreſs with dry lint, there will not be much occaſion for theſe painful applications. By fixing *lap. vitriol.* or *cauſt. lunare* into quills with ſealing-wax, they may be uſed much more commodiouſly.*

OF

* See diſſertations concerning the different kinds of applications uſed in the cure of wounds, *in Recueil de Piecés de l'Acad. Roy de Chirurg.*

The

OF BANDAGES AND SUTURES.

AFTER having attended to the different kinds of wounds, and the intentions in curing them, we ſhall now ſpecify the bandages and ſutures, as far as they are neceſſary and ſubſervient to thoſe purpoſes. The technical bandages of uſe in wounds, are the uniting, the retentive, and the expulſive; and that called the tailed-bandage, uſed in compound fractures, will be found very proper upon ſome occaſions in other wounds.*

The

The oppoſite cauſtics, ſo termed and recommended by doctor *Barry* in the Med. Eſſ. is a very powerful method, to deſtroy large fungi, performed by alternate touches of *lap. infern. & ol. vitrioli*, as long as ſhall be found neceſſary. It was practiſed by *Wiſeman* for the ſame purpoſe, and I did the ſame, a great many years ago, upon his authority, and often ſince, with great advantage.—— The *eau mercurielle* of *Le Dran* is a very efficacious application, to anſwer the ſame end, which is a ſolution of *merc. crud. p. i. in aq. fort. p. ii.* I have frequently experienced the uſe of this alſo much to my ſatisfaction; ſo have many of my brethren upon my recommendation.— See ulcers with carious bones, in Vol. III.

* See the advantage of this bandage, in ſimple as well as compound fractures, in Vol. II.

The uniting bandage, uſed in rectilinear wounds, is made with a double-headed roller, of a fit length and breadth, according to the part it is to be applied upon, having a longitudinal ſlit cut in the middle, of three or four inches length. After dreſſing the wound, as has been directed, compreſſes are to be applied on each ſide of it, in ſuch a manner, as to preſs from the very bottom to the lips or edges of the wound, before the application of the roller; which, by having one head paſs through the ſlit, will give an opportunity of drawing the lips of the wound together, as may be eaſily conceived. Sometimes it may be found neceſſary to place pieces of ſtiff paper upon, or wrapt up in, the compreſſes, or to uſe plaſter-compreſſes, made as have been directed, that the bandage may act more equally and powerfully.——When wounds are ſtitched, this bandage is alſo very uſeful, in order to ſupport the ſtitches, and prevent their breaking out, before the agglutination of the wound is accompliſhed.*

When

* Mr. *Dent*, an ingenious ſurgeon at *Dublin*, invented, a few years ago, an uniting bandage for the hare-lip, in order

When we make uſe of a ſingle-headed roller, as a retentive bandage only, we ſhould always remember to begin the application of it on the ſide oppoſite to the wound; the reaſon is obvious enough, in order to prevent a farther ſeparation of the lips of the wound, as the contrary manner of applying it, tends directly to divide them.

The expulſive bandage is performed with a ſingle headed-roller, making the preſſure gradually leſs, by ſmall and even edgings from the bottom of the wound to its orifice; ſpending the reſt in ſuch a manner, as the ſurgeon's diſcretion and judgment ſhall direct, to have the whole ſit eaſy upon the part, without interruption to the refluent blood.

The double-headed roller, the triangular, and quadrangular bandages, ſo called from their figure, are thoſe frequently uſed in wounds

order to prevent uneaſy preſſure upon the pins, made by thirty or forty threads paſſing between each other, the neceſſary ſpace in the middle of the fillet: and ſuch a kind of bandage, of a proportionate ſize, may have its uſe in other parts, to make the preſſure more even and equal upon the compreſſes.

wounds of the head. The roller muſt be applied artfully, ſo as to lie ſmooth and even upon the part, in neceſſary circulars and reflexers; it ſhould not be full four inches broad, have neither ſelvage nor hem, and be ſix or eight yards long, made of ſoft cloth. This is called by the writers on this ſubject, the *capeline*, or reflex bandage.——The triangular bandage is made with a handkerchief, or ſquare cloth of a proper ſize, doubled into that figure, which makes a very uſeful bandage, for wounds of the forehead, and ſome other parts of the head.——The quadrangular is made of ſoft cloth, about three feet ſquare, or a little longer than broad, which is an excellent bandage for the head. It is called by the *French*, *le grand couvre-chef*; the application of it may be learnt from *Heiſter*, and other writers, upon this uſeful branch of ſurgery; for it is beſide the preſent purpoſe to treat profeſſedly of bandages, which the moderns have wiſely endeavoured to reduce into a narrow compaſs, many of them, mentioned by the ancients, and thoſe of the laſt century, ſerving only to perplex our art; and ingenious men will

will exerciſe their invention upon extraordinary occaſions: but the application of bandages cannot well be learnt by verbal deſcription without *autopſy* and practice.——Great care is required in the application of them; for when made too ſtrait bad conſequences may enſue.

OF SUTURES.

THE ſecond manner of keeping the parts in contact, that were ſeparated, is by ſutures. The five kinds now in uſe are, 1. The dry ſuture. 2. The twiſted, uſed in the hair-lip, and ſuch like wounds. 3. The interrupted. 4. The quilled. 5. The ſpiral, or the glover's. But ſtitching of wounds, as we have hinted, is not ſo generally practiſed, by the ableſt ſurgeons, as it uſed to be in the laſt and former ages.

The dry-ſuture, is made by two pieces of ſticking-plaſter, proportioned to the ſize of the wound, to which very narrow tapes are to be fixed, at due diſtances. After the hair is ſhaven off the part, as cloſe as poſſible, the

plaſters are to be applied at ſmall diſtances from the lips of the wound, which are then to be brought gently and equably together, and covered with an even pledget of ſome vulnerary balſam, as before directed, retaining them in contact, or as nearly ſo as poſſible, by tying the tapes with great exactneſs, taking particular care to have them correſpond with each other on the oppoſite ſides; and they ſhould be tied with ſlipping knots, that they may be readily ſtraitened or looſened occaſionally. Inſtead of tying the tapes, they may be made to paſs through ſlits, like the uniting bandage, and then ſecured with very fine pins; or ſtrips of plaſter may be uſed to anſwer the ſame purpoſe, which I have found ſucceed very well. There is another method of making the dry-ſuture, with only one piece of plaſter, having longitudinal holes cut in it, at a proper diſtance from one another, which give an opportunity of examining the ſtate of the wound, and applying dreſſings the better to it, as ſhall be found requiſite. It is made by faſtening the plaſter firſt, well on one ſide of the wound, bringing the lips of it gently together, as

already

already directed, and then applying and fixing it carefully to the other, dreſſing the wound over the opening of the plaſter. This kind of ſuture is of uſe in any part, but more particularly in wounds of the face, to prevent deformation, from the needle and ligature.

After theſe ſutures, it is adviſable to apply eaſy compreſſes and the uniting bandage, when they can be conveniently adapted to the part, in order to aſſiſt and ſupport the plaſters, in keeping the lips of the wound in appoſition; and it will be neceſſary to attend diligently to the ſtate of the wound, from time to time, and ſtraiten or ſlacken the ſuture and bandage, renewing or continuing the old dreſſing, according to appearances of the wound and adjacent parts, till the union of it is perfected, which will ſometimes be in a few days. The time generally allowed for the union of wounds, of any conſiderable ſize, is ten or twelve days; but more ſuperficial ones often unite in three or four. When we have reaſon to believe the union is completed, the plaſters are to be carefully removed; though commonly the moiſture

proceeding from the wound, inſinuates itſelf between them and the ſkin, making them eaſy to be taken off, and a renewal of them neceſſary ſometimes, before the union of the wound is effected; under which circumſtance, great care is required to have the parts kept together, by a proper aſſiſtant, whilſt we are taking off the old uſeleſs plaſters, and applying the new.

I have uſed the following method in ſome large inciſed wounds, with a good effect, in preventing the receſſion of their lips. Inſtead of the ſingle pieces of plaſter, adapted to the parts, as in the dry-ſuture, I have put five or ſix pieces of plaſter together, with a piece of thin ſheet-lead in the middle, as deſcribed before, in making plaſter-compreſſes; and after fixing them exactly, as directed, near the lips of the wound, carried a ſufficient number of narrow ſtrips of the ſame plaſter over them, paſſing them through ſlits, like the uniting bandage, returning the ends over theſe compreſſes; and by their adheſion all together, they will prove a powerful means of anſwering the deſign. I have found by experience, that half the quantity of re-

ſin,

ſin, directed in the Diſpenſatory to be added to the *emplaſt. commun.* makes it adheſive enough for theſe purpoſes, nay, that it is ſo even without the addition of any reſin, if the plaſter is well made.

The twiſted ſuture, uſed in the hair-lip, and in the total diviſion of pendulous parts, as the ear, the noſe, &c. is performed by introducing one, two, or more, needles or pins through the whole ſubſtance of the lips of the wound, twiſting a waxed thread neatly about them, in the form of a figure of 8. The needles or pins are to be choſen longer or ſhorter, as the circumſtances of the wound direct; in order to introduce them, the lips of the wound are to be held firmly, with the finger and thumb, which is a better method in general, than to uſe the ſtitching quill, as directed by ſome ſurgeons; care muſt be particularly taken, to enter the needles or pins at a ſufficient diſtance from the edge of wound, making them paſs quite through, and out at the ſame diſtance on the oppoſite ſide, that they may not be apt to cut their way out, before the wound is well conſolidated. When they are thus introduced, we

are to wind a ligature, as has been deſcribed, in the croſs manner that taylors fix a needle and thread upon their ſleeves; or we may make one ligature ſerve for all. After this, we are to take off the points of the needles or pins with inciſive pincers,* fixing little compreſſes, made with ſnips of common plaſter, under the ends of them on each ſide, applying to the wound a pledget armed with ſome vulnerary balſam, not apt to produce matter, but of the moſt agglutinating nature, and a common plaſter over it, with eaſy compreſſes and the uniting bandage, where they can be commodiouſly uſed, for the ſame reaſons, as given in the application of the dry-ſuture. The wound is to be dreſſed in this manner, at ſuch diſtances of time, as ſhall be found neceſſary, but it does not require daily dreſſing, which poſſibly might interrupt the union of it; when that is effected, the needles or pins are to be cautiouſly

* Silver-pins may be had of the inſtrument-makers, with ſteel points, ſcrewing and taking out eaſily, by which this inconvenience may be obviated.——See Monſ. *Louis's* Diſſertation upon this ſubject, in *Mem. de l'Acad. Roi. de Chirurgie*, tom. 4.

tiouſly withdrawn, ſtill continuing ſome proper application, till the holes made by them be filled up.

The interrupted ſuture comes more generally into practice than the other. It is performed with a needle of a proper ſize, as the nature of the wound directs, threaded with flat waxed ligature, by thruſting it through both lips of the wound, with or without the help of a ſtitching-quill; bringing them together, in the manner directed in the dry-ſuture, and keeping them ſo, by tying the ligatures with ſlipping knots, that they may alſo be occaſionally looſened or ſtraitened; making a number of ſtitches, according to the length of the wound, at the diſtance of near an inch from each other. In ſuperficial wounds, needles of the leaſt curvature are propereſt; in deep wounds they muſt be curved in proportion. In ſuch a caſe, the needle muſt be thruſt down to the bottom of the wound, and if it is a very deep one, from without inwards, taking out the needle, and from within outwards; obſerving that the punctures correſpond, and be made at due diſtances from the edges of the wound, that

the ligature may not cut through too ſoon; but if it is not a deep wound, both lips may be pierced at one thruſt, without taking out the needle. When the wound is deep, the teguments thick and tough, and the operator's fingers bloody, he may find it difficult to puſh the needle through; then *Petit's port d'aiguille*, deſcribed by *Garengeot* in his *Traité des Inſtrumens de Chirurgie* may be uſeful; but in general, the fingers will fully anſwer the purpoſe, without that aſſiſtance. When there is a neceſſity of making more ſtitches than one, we ſhould begin next to one end, rather than in the middle of the wound, always remembering to make the ſurgeon's knot or nooſe, that the ligatures may be eaſily looſened, in caſe pain or inflammation ſhould make it neceſſary. The wound itſelf is to be treated, as has been already directed, making ſuch other applications, as may moſt effectually prevent pain, inflammation, &c. not forgetting to apply a very eaſy compreſs and gentle bandage; here alſo, compreſſes on each ſide the wound, and the uniting bandage, may prove very uſeful and ſubſervient to the ſtitching. We ſhould not

ſuffer

ſuffer the ſtitches to remain longer than it is neceſſary in the wound, becauſe the ligatures, cutting the fleſh and ſkin, may leave pretty large holes, ſometimes proving troubleſome to cure, beſides adding to the deformity of the ſcar, which ſhould be avoided, as much as we can, for the patient's ſecurity, and our own credit.

The quilled-ſuture is ſeldom made uſe of, but in *gaſtroraphy*, for large extenſive wounds in the *abdomen*, though it may, without impropriety, be uſed in ſuch wounds, in other parts of the body, when we have reaſon to fear the ligatures, in the interrupted ſuture, ſhould cut quite through too ſoon, by the ſtrong receſſion of their lips; but as we ſhall be obliged to mention it in wounds of the *abdomen*, we ſhall defer the deſcription of it till then.

The glover's, ſpiral, or continued, ſuture, is now only uſed in wounds of the inteſtines or ſtomach, the deſcription of which, therefore, in courſe, comes under the ſame article as the laſt.

Sutures are to be uſed only in clean, recent wounds, as we have obſerved on *ſymphyſis*, where

where no large blood-veſſel is cut; for confinement of blood in the wound might produce bad ſymptoms, as inflammation, &c. and to practiſe them in old wounds would be attended with as bad conſequences, by detaining the matter that ſhould be evacuated, and ſo retard the healing. Sutures are improper in contuſed wounds; for the contuſed parts in a wound muſt ſeparate and be digeſted off, before nature can perform her part in the cure; the ſame reaſon holds good, when the wound is internally cruſted over: and when there is a great loſs of ſubſtance, ſtitching would be evidently wrong, as, by it, the parts would be put too much upon the ſtretch, cauſing great pain in bringing the lips of the wound together; and could they be ſo united, the cicatrix probably would appear ſo puckered and deformed, as to bring a reproach upon the ſurgeon. We are not to attempt ſtitching a wound, where there is a manifeſt hazard of puncturing a large veſſel; we are alſo to reject this practice, if there is an inflammation, or tenſion of the parts, for under ſuch circumſtances, it would certainly increaſe the ſymptoms, and might

might prove fatal in a bad habit of body. If there is reaſon to apprehend an extraneous body lies latent, no caution againſt ſtitching is wanting. To ſtitch a poiſoned wound would be deſtructive practice. And ſutures are not adviſable, except under particular circumſtances, upon parts that are in continual motion, as the *thorax* and *abdomen*; for by the involuntary motion of reſpiration, the ſtitches might not only ſoon be rendered uſeleſs, or break out, but the wound be made worſe, than it would have been without ſtitching: however, the dry-ſuture, or ſtrips of adheſive plaſter, to keep the lips of the wound from receding, are proper, and may prove very beneficial on that account.*

From what has been ſaid, we ſee what wounds are curable by *ſymphyſis*, and what by *ſyſſarcoſis*, and how far bandages and ſutures are neceſſary aids in the cure of wounds. Now we ſhall conſider and direct, more particularly, the treatment of wounds of different parts of the body; as of the arteries, veins,

* In *Heiſter's* ſyſtem of ſurgery, we find plates that clearly deſcribe the various kinds of ſutures, as well as bandages.

veins, lymphatics, nerves, and tendons, reſerving thoſe of the membranes and ligaments, till we come to wounds of the joints, towards the concluſion.

An artery is an extenſible, elaſtic tube, conſiſting of three coats, made up of fibres in different directions; the external is connected to the ſurrounding parts by cellular membrane, and conſiſts of fibres, running in every direction; the fibres of the ſecond are longitudinal, and thoſe of the internal are circular. By this conſtruction, it is capable of dilatation and contraction, lengthening and ſhortening, to anſwer many purpoſes of importance in the animal œconomy.

We ſhall begin with the cure of a wound in a ſmall artery. When it is totally divided, in any external part of the body, it retracts into the neighbouring parts, as we have obſerved before, the *hæmorrhage* generally ſtopping of itſelf, and differs not from a ſimple wound, as we have deſcribed; but when ſuch a veſſel happens to be punctured, or only partially divided, according to our ſecond ſuppoſition, the enſuing *hæmorrhage* may

may prove of long duration; in which caſe, if it can eaſily be come at, without injuring any conſiderable part, it is to be totally divided, which reduces it to the ſtate of a ſimple wound; or the wound muſt be ſufficiently enlarged, by a longitudinal inciſion, to make room for applications, and then dry lint or *puff-ball*, lint moiſtened in a *vitriolic* ſolution, or the white of an egg, dipping it into flour, or ſome ſuch application, carefully applied, with compreſs and bandage, will generally anſwer the purpoſe effectually: or the needle and ligature may now be uſed. After the *hæmorrhage* is reſtrained, the wound is to be treated in the common manner.

When a conſiderable branch of the *femoral*, or *brachial* artery, in the leg or cubit, is wounded, the effuſion of blood, unleſs ſpeedily reſtrained, may bring the patient's life into danger; on which occaſion, various methods are propoſed and practiſed, as by compreſſion, ſtyptics, eſcharotics, the actual cautery, and the needle and ligature, which is preferable to the other, from its greater ſecurity,

ſecurity, when it can conveniently be uſed.*

When we would rely upon compreſſion, after the application of a ſufficient quantity of lint, or other ſoft ſubſtance, with or without a *ſtyptic*, to the mouth of the veſſel, the beſt and moſt effectual compreſs is made with pieces of plaſter, interpoſing a piece of card, ſtiff paper, or thin ſheet-lead, giving it ſuch figure and dimenſions, as we find beſt adapted to the purpoſe, in order to have the bearing

* *Paré* was the firſt who uſed the needle and ligature in amputations; but he was not acquainted with the curved needle; therefore was forced to paſs his needle from the veſſel to the edge of the ſtump, including ſome of the ſkin in the ligature. His practice was oppoſed with all the acrimony that prejudice could ſuggeſt, particularly by *Gourmelin*, a doctor of the faculty at *Paris*, where phyſicians and ſurgeons have been at variance many centuries, which diſcord made *Lanfranc*, an eminent practitioner there, both in phyſic and ſurgery, who had been educated at the famous *Salernian* ſchool, expreſs himſelf in this exclamatory manner. " *O Deus! quare ſit hodie tanta differentia inter phyſicum & chirurgum?*—— See *Hiſtoire de l'Origine & des Progrès de la Chirurgie en France*, which was publiſhed upon the eſtabliſhment of the Royal Acad. of Surgery, at *Paris*.

bearing made, by the bandage, directly perpendicular upon the wounded veſſel; endeavouring to leave the adjacent parts, as free as poſſible from circular preſſure, which tends to increaſe the *hæmorrhage*, and produce other bad ſymptoms; but in order to obviate thoſe inconveniences, thick compreſſes of cloth, with ſtiff paper on the outſide, may be applied over the part, and to the oppoſite ſide of the limb, which will leave room for the circulation of the blood through it, without any prejudicial interruption, though a proper degree of preſſure be made with the roller; which ſhould be double-headed, paſſing through a ſlit upon the ſuperior compreſs, as directed in the uniting bandage, by which means the force may be increaſed more commodiouſly, without hazard of its ſlipping.—The bandage, &c. muſt be varied, according to the different parts, and circumſtances attending the *hæmorrhage*, in which reſpects, the ſurgeon muſt exerciſe his genius and invention: or a machine may be conſtructed, in caſe of emergency, upon the principles of that in my obſervations, or like that in *Heiſter*, &c. when we happen to be in a place,

place, where we can meet with a proper workman.——We find compreſſion alone infallibly anſwers the end, when there is a bone to counteract it, immediately under the wounded veſſel, as daily experience ſhows, in opening the *temporal* artery, where dry lint and a plaſter compreſs, having a piece of card or ſtiff paper in it, with the well adapted *nodoſe* bandage, are all that is neceſſary to reſtrain the bleeding after this operation. This bandage is made with a fillet or roller, about four yards long, and near an inch and an half broad, with two heads, which are to be reverſed two or three times, forming knots in order upon the compreſs. This kind of bandage may have its uſe ſometimes in other parts, as I have frequently experienced, as well as upon this occaſion.

There have been a great many *ſtyptics* publiſhed, and boaſted of as infallible, which, upon trial, have not anſwered the encomiums given them, but much diſappointed the ſurgeon's hopes and expectations; and indeed it is running too much riſk, to rely abſolutely upon them in wounds of the large arteries. As to the uſe of fungous ſubſtances, which

is

is a very ancient practice in *hæmorrhages*, I think, ſomething very conſiderable may be reaſonably expected from them, when exactly applied to the mouth of the bleeding veſſel, with powerful compreſſion, without which, the ſurgeon's expectations will, in all probability, be fruſtrated. That kind, which I have often uſed, and prefer to all the reſt, is the *crepitus lupi*, called alſo *lycoperdon*, *puff-ball*, *mullipuff*, or *boviſt*, by the botanic writers. This plant grows frequently in paſture-grounds, to the ſize of a pompion, which it reſembles in form; till its full growth, it is white, like a muſhroom, and of ſuch texture; then gradually grows brown, becoming a very ſoft ſubſtance in autumn, which is the time of gathering it for chirurgical uſe, ſooner or later according to the ſeaſon.

As I have found this fungous ſubſtance a very uſeful application, on many occaſions, I am not willing to ſuppreſs what I know of its efficacy, from my own experience, which I ſhall relate, after giving a ſhort account of the opinion of others concerning it. *Felix Wurtz* commends it.——*Schroder* calls it

fungus chirurgorum.——*Cluſius* ſays it is very efficacious in ſtopping effuſions of blood.——*Bauhine* ſays the ſame.——*Heiſter* ſpeaks of it, as a thing much in uſe for this purpoſe.——*Ray*, in his *Synopſis method. Stirp. britan.* after deſcribing the plant, ſays, "*Hæc* "*ſubſtantia vulneribus, ubi ſiccata fuit, imponi* "*ſolet, pro ſanguinis fluxu cohibendo.*" And I think *Boerhaave* recommends it on this occaſion.

It is a ſofter application, and more abſorbent than lint, which conſiderations have induced me to uſe it often after amputations, inſtead of lint, applying it in ſmooth, even ſlices; and after extirpating ſeveral breaſts, and large tumours, where the veſſels have not been large, I have uſed it with moderate preſſure, without finding any neceſſity for the needle and ligature. I have alſo found it of ſingular ſervice in *bleeding cancers*, by its conſtantly ſtopping the effuſion of blood, with gentle compreſſion, exciting no pain, which is to be looked upon as a happy circumſtance, in ſuch deplorable caſes.——Perhaps ſlices of this, applied to ſtumps, might anſwer the end propoſed by Mr. *Kirkland*, in the

the 2d vol. of the *London Medical Obſervations and Inquiries*, of abſorbing the matter, inſtead of ſponge, recommended by him, in order to prevent a reflux of it.——This ſubſtance may be made more compact, by putting it into a preſs; and ſo prepared, ſeems fitter for ſome purpoſes; as for inſtance, ſuppoſe a veſſel, opened in a part where it cannot be come at with the needle, and would be dangerous to apply an *eſcharotic*, a piece of ſuitable dimenſions might be conveyed down to the bleeding veſſel, filling the part up, ſo as to have ſtrong compreſſion made upon it, as we have directed, by hand or otherwiſe; but the caſe may be ſo circumſtanced, as we have hinted before, as to make the fingers the beſt, and indeed the only, compreſſive inſtruments, that can be admitted. As this ſubſtance, thus prepared, imbibes moiſture, it will expand, and act more ſtrongly upon the mouth of the veſſel, if the compreſſion is properly regulated; and the diſtention of the ſurrounding veſſels will, in ſome meaſure, promote this effect. This is the manner, that I apprehend fungous ſubſtances act in reſtraining *hæmorrhages*.

Eſcharotics are more powerful than ſtyptics or aſtringents; for they deſtroy the life of the parts to which they are applied, inducing an *eſchar* or cruſt on the mouths of the bleeding veſſels; but *ſtyptics* or aſtringents, according to the general meaning or acceptation of the words, ſignify no more than an exertion of their power by coagulating the blood, or leſſening the diameter of the veſſels, by putting their *fibres* upon contraction. The corroſive applications, uſed on theſe occaſions, cauſe exquiſite pain, ſometimes throwing the patient into convulſions, when near nervous parts, eſpecially if they have *arſenic* in their compoſition, which ſome authors of no ſmall note have recommended; and among the reſt, that great and deſervedly eſteemed practitioner ſerjeant *Wiſeman*, has run into this error. The leaſt dangerous of the claſs of *eſcharotics*, uſed in ſtopping *hæmorrhages*, is the *vitriolum romanum*, the ſingular good effect of which, Mr. *Layman* and I experienced, with the compreſſive machine, as related in my obſervations: but all theſe applications are attended with great inconveniences, beſides the pain, &c. which they

they excite, as a return of the bleeding, when the *eſchar* falls off; or deſtroying the adjacent parts, by which another artery, if it lies near, may be opened; and this unhappy effect was verified in the caſe, that *Boerhaave* uſed to mention to his pupils, of a young man at *Leyden*, who loſt his life by ſuch an incautious ſtep.——Some years ago, I was called to an elderly woman, a fortnight after having had the *radial* artery divided, a little above the wriſt, with a ſharp-pointed knife, by the flapping of the wing of a turkey, as ſhe was killing it. A ſurgeon, of but little experience, immediately plugged up the wound with ſome *ſtyptic*, and ſo, from time to time, ſtopped the bleeding, by various applications; but the frequent returns of it exhauſted the patient's ſtrength, bringing her life into imminent danger. The painful applications cauſed great tumefaction, and inflammation of the whole limb, in which ſtate I found her; and there appeared to me no other expedient left, but to apply the *tourniquet*, and diſſect the parts, between the tendons, as far as neceſſary, to diſcover the bleeding veſſel, which I did,

with ſome difficulty, the ends of the artery being conſiderably ſeparated; but by the knife, with the aſſiſtance of the diſſecting *forceps* and hook, I raiſed them ſufficiently to convey ligatures about them, without injuring any of the neighbouring parts; which effectually ſtopped the effuſion of blood: and the wound was healed by the common treatment, preſerving the perfect uſe of the limb.

In conſideration of ſuch danger and inconvenience, attending the uſe of *eſcharotic* applications, ſome of the ableſt ſurgeons have preferred the *actual cautery*, as the pain it creates is not of ſo long duration, and its effect more certainly limited, as well as quicker, when exactly directed to the mouth of the bleeding veſſel, with the aſſiſtance of the *tourniquet:* and a *canula*, upon ſome occaſions, will be found neceſſary to defend the neighbouring parts, and convey the *cautery* to the deſtined place more preciſely. By touching the part artfully with the *cautery*, of a proper degree of heat, an *eſchar* may ſoon be formed, to reſiſt the force of the blood; gentle touches at firſt, quickly repeated,

peated, will be found to anſwer the end beſt; forming the *eſchar* gradually, is the moſt likely manner to make it ſufficiently firm; for ſhould the *cautery* be kept on too long upon its firſt application, it may bring fleſh away with it, and fruſtrate our deſign. This I ſpeak from experience.——A young gentleman, fighting a duel, received a thruſt with a ſword between the *radius* and *ulna*, whence proceeded a profuſe *hæmorrhage*, proving beyond doubt, that the *median* artery was opened. After the application of a *ſtyptic*, ſtrait circular bandage was applied, upon which the bleeding increaſed, but abated upon removal of the bandage: however, the *actual cautery* was uſed, and effectually ſtopped the effuſion of blood. In this caſe, we have a convincing proof of the ill effect of ſtrait circular bandage, which, acting upon the *radial* and *ulnar* arteries, threw more blood, and with force in proportion, into the *median* in its progreſſion, obſtructing at the ſame time the reflux of the blood by the veins; which cauſes conſpired to increaſe the *hæmorrhage*.

The method of reſtraining *hæmorrhages* by the *actual cautery* is liable to the ſame objection, in reſpect to the hazard of future bleedings, upon the fall of the *eſchar*, as that by an *eſcharotic*; of which the ſurgeons in former ages, before the uſe of the needle and ligature, were but too well convinced, by the loſs of their patients; therefore ſhould it be thought adviſable to put ſuch methods in practice, upon any emergency, in theſe days, the bandage and compreſſes, applied as before directed, ſhould not be removed in leſs time than three or four days, or more, unleſs for particular reaſons, to look at the wound, which muſt then be treated with the utmoſt care and gentleneſs, preſerving a due degree of preſſure upon the veſſel at the ſame time, leſt we ſhould diſturb the application that had been made to it, before it is ready to fall off; over which, for greater ſafety, it will ſtill be right to apply *puff-ball*, prepared as directed, or ſome ſuch ſubſtance, moiſtened in ardent ſpirits, to retard the fall of the *eſchar* as long as poſſible, and reſiſt the impetus of the blood with moderate preſſure; and it

ſhould

ſhould be continued after the *eſchar* is fallen off, for ſome time, till we have good reaſon to believe the veſſel is united, and firmly ſealed up with fleſh. The ſame application immediately made to the *eſchar* produced by the *actual cautery*, aſſiſted by the compreſſes and bandage recommended, I am well aſſured, will prove a good means of ſecurity, againſt a conſequent *hæmorrhage*. We may remember, that the *actual cautery* is the only reſource in *hæmorrhages*, in ſome parts, particularly in the mouth, as we have hinted before: and we muſt not forget, when we are called to a patient, on account of a profuſe *hæmorrhage* upon a limb, to apply the *tourniquet* directly to reſtrain it, till a proper *apparatus* can be prepared. The *tourniquet** will be found abſolutely neceſſary, to give an opportunity of making any kind of applications, with exactneſs, to the bleeding veſſel, after well wiping away the blood with a ſponge; and it ſhould be kept on a little while after, letting

* Mr. *Crane*, one of the ſurgeons of St. *Bartholomew's* hoſpital, invented, a few years ago, an excellent *tourniquet*, ſuperior to any I have ſeen, which ſhould, by all means, be had in plenty in the army and navy.

letting it looſe gradually, increaſing the compreſſion with the hand, at the ſame time, over the bandage and compreſs, for reaſons too obvious to want explanation.

As the preceding methods are dangerous and precarious, the beſt ſurgeons now chuſe the needle and ligature, where practicable, even though there ſhould be a neceſſity of enlarging the wound, in order to come at the veſſel; which method is more ſafe and certain in its effect, care being taken to avoid injuring any conſiderable parts. This operation is performed with a needle of a proper curve and ſize, threaded with a flat ligature waxed, made of ſhoe-maker's thread, which is the beſt material, when fine and even, to make ligatures of. The needle is to be introduced a little above and below the diviſion or orifice of the veſſel, and the ligature to be cut in the middle, after drawing it equally in; or ligatures may be paſſed in ſeparately. The opening of the veſſel will be eaſily diſcovered by looſening the *tourniquet-ligature*, when that can be uſed; and we muſt endeavour to avoid pricking or including nerves or tendons, which may be effected, when not

not interrupted with blood, by raiſing the veſſel a little, where it can be fairly brought in view, with the point of the knife and diſſecting *forceps*, in an artful hand.* This wound is to be conſidered, as a recent *aneuryſm*, and it is of the utmoſt conſequence, to make two ligatures upon the artery; for the bleeding may readily continue from the lower part of the canal, by means of the communicant branches; as we may eaſily conceive, when we conſider that the ſtructure of the arterial ſyſtem is without valves.† There are two inſtances in the *Philoſ. Tranſ.* from Mr. *Cowper*, a great anatomiſt and ſurgeon, in

* A hafted needle may prove a very uſeful inſtrument in this operation ſometimes, having the eye near the point.

† See Mr. *Lambert's* method of ſtitching the artery in an *aneuryſm*, in the 2d vol. of the *London Medical Obſervations and Inquiries*.——It is to be practiſed only in recent caſes: and it may alſo be conſidered, how far two or three ſtitches of the ſpiral future, made with a very fine flat needle, properly curved, may anſwer the like purpoſe.——The *port d'aiguille* may be found a neceſſary inſtrument in Mr. *Lambert's* method, and in making this future, for very obvious reaſons.

in his time, to enforce this attention.* After thus ſecuring the wounded artery againſt future bleeding, the wound itſelf is to be treated in the common manner, with digeſtive,

* The violent charge againſt ligatures in amputations, I am perſuaded, is not well founded, from the uninterrupted ſucceſs I have had in a great number of inſtances, ſince I practiſed the method recommended in my obſervations, with no other bandage than ſtrips of common plaſter, and a knit woollen cap; whence I cannot help concluding, that the alarming ſymptoms which have been aſcribed to the ligatures, principally aroſe from ſtrait circular bandage. My friend doctor *Donald Monro*, to whom I am under very great obligations, has told me, that the ſurgeons of the Royal Infirmary at *Edinburgh* were aſtoniſhed at the ſucceſs attending amputations there, when they laid aſide ſtrait bandage, by his father's advice, whoſe authority cannot have too great weight in a matter of ſuch concernment, as tends directly to obviate pain and preſerve life: and the medical art is infinitely indebted to that gentleman.

Since I wrote theſe papers, I have obſerved, Monſ. *Pouteau*, ſenior ſurgeon of the *Hôtel-Dieu*, at *Lyons*, in his *Melanges de Chirurgie*, printed in 1760, and Mr. *Kirkland*, an eminent ſurgeon in this kingdom, in his treatiſe upon ſuppreſſing *hæmorrhages* from divided arteries, publiſhed in 1763, differ in their ſentiments from Monſ. *Petit*, whoſe *hypotheſis* is, that *hæmorrhages* are ſtopped after

tive, &c. applying gentle compreſs and bandage, making it only retentive, and ſuffering the ligatures to become quite looſe, before the removal of them.

By whatever means the effuſion of blood, proceeding from a wounded artery, is ſtopped, if the patient is of a plethoric, ſanguine habit, with a ſtrong pulſe, veneſection is above all things neceſſary, in order to leſſen the quantity, and weaken the impulſe of the blood, repeating it occaſionally.* Upon the ſame principles, we ſhould preſcribe a cooling, ſpare, diet, and laxatives, that ſtimulate in the leaſt degree, adviſing the patient, by all means, to keep himſelf quiet, and his mind free from perturbation.——The ancients laid

ter amputations by *coagula* of blood, formed ſeveral inches up the arteries, as appears in the *Mem. de l'Acad. Roy. des Sciences.* I have the ſatisfaction to find the experiments, made by theſe two gentlemen, fully ſupport my opinion upon this ſubject, which I wiſhed to have had an opportunity of making myſelf, when I publiſhed it among ſome caſes and remarks in ſurgery, in the year 1758.

* See *Hales's Hæmaſtatics.*——Doctor Watts's Diſſertation on Revulſion and Derivation, is well worth reading.

laid great ſtreſs upon revulſion and derivation, even in wounds of the arteries externally, as we may obſerve in *Fabricius ab Aquapendente*, *&c.* but they are of much more conſequence in *hæmorrhages*, from wounds of the internal veſſels, as we ſhall ſhow hereafter; when bleeding and every other means, that reaſon can ſuggeſt, ſhould be employed to diminiſh the quantity of blood, and weaken its impelling force. Reſt of the body ſhould be very ſtrictly enjoined, and the utmoſt endeavours uſed to keep the patient's mind eaſy, allowing no more food than barely to ſupport life. What he eats ſhould be of a cooling, incraſſating, and agglutinating nature, and his drink ſhould be of the ſubaſtringent kind, as *tinct. roſar.* red wine and water moderately acidulated with *ſpirit. vitriol. &c.* to be taken cold; not forgetting the prudent uſe of opiates, occaſionally, to procure reſt, and keeping the bowels open, by the gentleſt means. In ſuch caſes, the *bark*, *alum & nitre*, from their well known properties, may alſo be adminiſtered with good advantage, according to the ſurgeon's diſcretion, when a regular phyſician

ſician cannot be conſulted. And in all great effuſions of blood, whether internal or external, the patients ſhould be kept in cool rooms, for very obvious reaſons, conſidering the effect of heat in accelerating the circulation of the blood; and the poſition of the body and limbs, muſt be governed by the nature of the wound, and ſituation of the part.*

It may not be here unſeaſonable to introduce the treatment of *aneuryſms*.

OF THE TREATMENT OF ANEURYSMS.

IN the treatment of wounds of the arteries, it has been obſerved, that when the trunk of an artery in a limb was wounded, loſs of ſenſation, motion, and nutrition, proved the conſequence of ſuch an accident, which conſideration induced authors to adviſe immediate amputation, at the wounded part; but in a wound of the *brachial* artery, far up the arm, when a pulſation is felt at the wriſt, that

* See note hereafter upon the article of *hæmorrhage* in wounds.

that circumſtance will juſtify treating the caſe according to the method propoſed in pages 170, 171, or like the falſe *aneuryſm*; for nature varies in the arterial ſyſtem, and ſometimes that artery is divided into two, long before it arrives at the joint; and I have ſeen an inſtance, where the diviſion was juſt after leaving the *axilla*, the ſuperior branch of it making the *radial*, and the other the *ulnar* and *median arteries*. Doctor *Hunter*, the moſt celebrated profeſſor of anatomy that ever was in *London*, exhibits many arms, in his courſe of lectures, ſhowing this *luſus naturæ*, at different diſtances from the joint. This gentleman's friendſhip and indulgence I ſhall ever remember with pleaſure and gratitude, having been infinitely obliged to him for his kind and frequent communications.*

When the external coat of an artery is wounded, both the other yielding to the lateral

* *Formius*, a very eminent ſurgeon at *Montpelier*, communicated to his friend *Riverius* the cure of a wound, wherein the *brachial* artery was divided; and expreſsly ſays, he ſucceeded by ligature immediately after the accident. Vid. *Prax. Med. Riverii inter Obſervationes communicatas.*

teral preſſure of the blood, it is to be conſidered, in the treatment of it, as a true *aneuryſm*, which may proceed from any external injury weakening the artery, as we have before obſerved; as whatever cauſe, be it external or internal, produces that effect, may give riſe to the diſeaſe. The characteriſtics, or diſtinguiſhing ſigns, of the different kinds of *aneuryſms*, have been ſpecified in the *diagnoſis*, pages 78, 79, 80, which ſhould be well attended to, in order to prevent error of judgment, and conſequently dangerous miſtakes in practice. Upon the authority of ſerjeant *Wiſeman*, *Hildanus*, *Tulpius*, &c. who were great practitioners and accurate obſervers, aſtringent applications, with compreſſion, have been tried; but as it is much to be feared, that a radical cure ſhould not be effected by this method, perhaps, where it is practicable, as below the knee or elbow, it is more adviſable to perform the operation, as will preſently be directed; for ſhould the tumour be ſuffered to increaſe, and happen to burſt ſuddenly, having no proper aſſiſtance at hand, it would more endanger the patient's life.

When the operation is thought adviſable, it is to be thus performed, after preparing the patient by bleeding, gentle purging, proper diet, &c. if it does not require to be inſtantly done, and time can be allowed for the obſervance of theſe preparatory rules, generally neceſſary before any capital operation; otherwiſe they muſt be attended to immediately after, as the ſurgeon ſees occaſion. The patient being placed in a good poſition and light, having the limb reſted ſteadily upon a table of a ſuitable height, the *apparatus* and aſſiſtants diſpoſed in order, and the *tourniquet* applied, a longitudinal inciſion is to be made into the tumour, the full length of it; and it may be requiſite to cut out an oval piece, as in opening a large abſceſs, in order to give an opportunity of removing the grumous or coriacious blood the better with the fingers or proper inſtruments, and ſponges ſqueezed out of warm water and brandy, that the ſound parts of the artery may be come at the more commodiouſly, to paſs the ligatures above and below the diſeaſed part with a needle properly curved, either with or without a haft. If the ligatures cannot be conve-

niently

niently paſſed, without hazard of including or puncturing the vein or nerve accompanying the artery, it is to be carefully ſeparated from them, with the point of the knife, when raiſed by the diſſecting *forceps* or hook. After having tied the ligatures ſecurely, which will be known by looſening the *tourniquet*, the next ſtep to be taken, or omitted, at the ſurgeon's diſcretion, as circumſtances ſhall direct, is to diſſect away as much of the diſeaſed artery between the ligatures, as can be done without injuring the adjacent parts, ſuffering the reſt to be thrown off in the courſe of digeſtion. Other two ligatures may be conveyed in at the ſame time the operation is performed, in order to obviate perplexity, ſhould a conſequent bleeding happen; leaving them looſe, to be uſed occaſionally, if either of the other ſhould ſlip or loſe its power. This is a precaution that ſhould not be omitted: I once ſaw this omiſſion attended with ſuch inconvenience, as I would willingly guard againſt.

We muſt ſpeak with diffidence, in reſpect to the uſe of *ſtyptics* in this caſe, which ſome ſurgeons have recommended and relied on,

ſtead of the ligature; but I have good reaſon to believe, the *puff-ball*, prepared as directed, and applied exactly to the mouths of the veſſel, after cutting away the diſeaſed part, raiſing it above the ſurface of the wound, *ſtratum ſuper ſtratum*, might effectually anſwer the end in ſome caſes, with a due degree of perpendicular preſſure; avoiding ſtrait circular bandage, by the method which has been deſcribed, in the article of ſtopping blood by compreſſion; but the ligature is the ſafeſt practice, therefore preferable when it can be uſed conveniently.

After the operation, the wound is to be treated in the common manner, allowing the ligatures, and all the dreſſings, to become quite looſe, by digeſtion, before removal of them, uſing ſuch eaſy compreſs and bandage as have been recommended.

When a true *aneuryſm* happens to be formed near the trunk of the body, where no operation can be practiſed, a bole plaſter, or ſome ſuch aſtringent application, with a ſoft, eaſy, and well adapted compreſs, obſerving a ſtrict regimen, and living upon a cooling diet, and bleeding now and then occaſionally,

caſionally, as an increaſed ſenſation of throbbing, or other ſymptoms may indicate; keeping the bowels open, and avoiding all violent agitation of body or mind, is the proper palliative method, to prevent its more ſpeedy progreſs; and nothing more is to be done under ſuch deplorable circumſtances.*

* Some years ago I was deſired to ſee a tumour juſt beneath the *clavicle* of a young man, that evidently appeared to be an *aneuryſm* of the *ſubclavian* artery; in which caſe much preſſure gave pain, but a gentle bandage, with a well adapted compreſs, made concave according to the convexity of the tumour, and very ſoft, gave him eaſe, and proved of conſiderable uſe. This patient died ſome years after of a fever, and I had not the opportunity of inſpecting the parts, to trace the extent of the *aneuryſm*.

My opinion was lately aſked by an elderly gentlewoman, of a ſtrong conſtitution and rather corpulent, concerning a very viſible pulſation of the *aorta aſcendens*, in the hollow juſt above the *ſternum*. In all other reſpects, except now and then a ſlight uneaſy ſenſation in the *thorax*, and difficulty of breathing for a ſhort duration, ſhe enjoys a good ſtate of health, and cannot aſſign any cauſe for the diſorder, nor recollect when ſhe firſt obſerved it. There is not yet any appearance of ſwelling externally, but it may be conſidered as an incipient *aneuryſm*.

A falſe *aneuryſm* is occaſioned, as has been deſcribed, by wounding all the coats of an artery; which moſt frequently happens in letting blood, a branch of the *brachial* artery, which generally divides at the bending of the arm, or juſt below it, often lying ſo ſuperficially, near the *baſilic* vein, that its pulſation may be eaſily felt and ſometimes ſeen, as has been remarked in the *diagnoſis*; which monitory intimation ſhould be remembered in veneſection, to put the operator upon feeling for the pulſation, in order to avoid ſuch an unfortunate accident, as has happened to ſkilful ſurgeons, through haſte or inattention. The orifice of the vein cloſing, though not in the artery, the blood coming from it, is pent in, conſequently muſt diffuſe and inſinuate itſelf into the *cellular* membrane, and interſtices of the muſcles, where it meets with leaſt reſiſtance. This kind of *aneuryſm* requires the operation, as has been directed, without delay, to obviate the fatal conſequences that may attend procraſtination.*

When

* Four ſuch caſes have fallen under my care, two of them in a recent ſtate, the other of long ſtanding and very

When the tumour, proceeding from this kind of *aneuryſm*, is become very extenſive, through neglect, the wound, in the operation, muſt be made ample in proportion, to give room to cleanſe the parts well from the grumous blood; and after ſecuring the bleeding veſſel by ligatures, as has been directed, the wound is to be dreſſed and cured accord-

very threatening; but all ſucceeded ſo happily, that the patients have the perfect uſe of their limbs.

See the caſe deſcribed by doctor *Hunter*, in the *London Medical Obſ. and Inq.* vol. 2. nothing ſimilar to it having been taken notice of before, in which the artery was wounded through the vein in bleeding, giving ſuch appearances.

Lazarus Riverius, a celebrated profeſſor of phyſic at the univerſity of *Montpelier*, more than a century ago, ſays he cured a child, five years old, of an *aneuryſm* cauſed by bleeding, with aſtringent applications, compreſs, and bandage. Vid. *Prax. Med. Cent.* 3. *Obſ.* 43.——*Pomeret* and *Formius*, two very ſkilful ſurgeons, were concerned together, for a woman with an *aneuryſm* in her arm, which proceeded from bleeding. She would not conſent to the operation, in the uſual manner, by ligature, as they at firſt propoſed; but when the tumour was increaſed to a great ſize under other means, it burſt of its own accord; and though they then cured the patient, yet the joint ever after remained immovably fixt. Vid. *Obſervationes ad Riverium communicatas.*

ing to general rules; but ſhould a mortification have ſupervened, that muſt be particularly attended to, and treated accordingly, with an *antiſeptic* fomentation, digeſtives a little more animated than ordinary, applying them moderately hot, but not to excite pain, wrapping the whole limb up in a warm *cataplaſm*, prepared with the fomenting liquor, *farin. hord. & aven.* and *ſpec. pro cataplaſmate e cymino*, which mixes up with the meals more uniformly, and with leſs trouble, into a proper conſiſtence, than by adding a portion of the *cataplaſm. e cymino*, and I think, makes a better application than this *cataplaſm* alone, which is commonly made uſe of for the ſame purpoſe; and it ſhould be remembered, not to apply it of a greater degree of heat, than gives a pleaſing ſenſation of warmth to the limb. Under this circumſtance, preſcribing the *bark* ſhould not be forgotten, when nothing contraindicates the uſe of that efficacious remedy; joining *ſerpentar.* with it occaſionally, and giving *camphire* and volatiles at the ſame time, if the patient is very languid.

Wounds

Wounds of the veins require no particular treatment; the *hæmorrhage* is generally ſuppreſſed, without any difficulty, by dry lint or *puff-ball*, with proper compreſs and bandage, and they are to be cured as other wounds in common.* But though the ligature has little to do in theſe kinds of wounds, yet, upon a ſuppoſition of the internal *jugular* being divided, in a wound of the neck, and it can be conveniently come at to paſs a ligature about it, it is adviſable, upon the upper part only; two are not required, as in an artery, for obvious reaſons.

The cure of wounds of the *lymphatics* comes next in order to be conſidered; whence ſometimes proceeds an abundant diſcharge, as we have obſerved in the *diagnoſis*. Lint or *puff-ball*, moiſtened in *alcohol vini*, or a ſolution of *alum* and *ſacchar. ſaturni* in *aq. calc. & alcohol vini p. æ.* will generally anſwer the purpoſe, when carefully applied with

* *Varices*, which are dilatations of the veins, ſometimes become very large and painful upon the legs, requiring opening, or even cutting quite away; which practice I have ſeveral times found neceſſary, and attended with a good effect.

with good compreſſion and but ſeldom dreſſing, as I have found by repeated experience. Upon the authority of a very eminent man, the needle and ligature may be advantageouſly uſed; and this practice I have alſo found ſucceſsful, where the veſſel could be well included; but when this limpid effuſion comes from a wound of the *parotid*, or other *ſalivary glands*, the above-mentioned treatment muſt be continued, till the veſſels collapſe, and the generation of fleſh ſtops their leaks; then the wound requires only common management to heal it.*

When

* About a year ago an elderly gentleman came to me, on account of a wound which he had received three weeks before upon his wriſt, juſt above the *piſiform* bone, wherein the tendons were laid bare. The wound was now in a foul, bad condition, attended with great pain and inflammation, and had been very improperly treated by a pretender to ſurgery, who made very light of it. All the way from this wound I could trace a *lymphatic*, lying rigid like a very ſmall cord in the *cellular membrane*, immediately under the ſkin, till it ſunk into the *axillary gland*: and in the whole courſe of it there was ſome tenderneſs, with a ſlight degree of inflammation, not extending more than a few lines beyond it. An emollient embrocation ſoon removed the rigidity of the *lymphatic*, the

When the nerves or tendons are punctured, partially or totally divided, they demand more attention than wounds of the fleſhy parts; in order to prevent pain and inflammation, by emollient fomentations, cataplaſms, embrocations, &c. The moſt ſuitable applications to the nervous or tendinous part itſelf, extending no farther, are thoſe of a ſubtile, ſpirituous nature, ſuch as *ſp. terebinth*, dreſſing the other parts of the wound with vulnerary balſams, as has been directed. The congruity of the applications may be known, in a good meaſure, by the agreeable and pleaſing ſenſation of warmth they give to the parts, without creating pain. Upon this head we may conſult *Ruyſch*, *Meck'ren*, *Fab. ab Aquapendente*, *Wiſeman*, and other practical

the tenderneſs and inflammation, after the wound was made eaſy by lenient dreſſings; and the cure was effected without any difficulty, by the quite contrary treatment to that which had been practiſed.

See note in pag. 9 of doctor *Hunter's* Diſſertation upon the *lymphatic veſſels*, in his *Medical Commentaries*, relating to doctor *Macaulay's* caſe.——And hiſtories of the cure of *lymphatics* opened in wounds, by profeſſor *Monro*, in *Med. Eſſays*, vol. 5.——Alſo ſee Mr. *Hewſon's* accurate Treatiſe on the *Lymphatic* Syſtem.

cal writers. Some authors have recommended *euphorbium*, and ſuch acrid applications, to the expoſed nerves and tendons, but they are dangerous, and may prove of fatal conſequence; as *Hollerius* and others teſtify. When the wound is too ſmall to admit of applications directly to the nerve or tendon itſelf, it will be right to enlarge it for that purpoſe, and to give room for a free diſcharge of ſuch acrimonious matter, as theſe wounds are apt to produce. It ſometimes happens, that a train of direful ſymptoms attend a puncture or partial diviſion of a nerve or tendon, making it abſolutely neceſſary to divide them totally, in order to ſave the patient's life; of which we have inſtances, upon good authority, to encourage the practice; yet, as the total diviſion of them may deprive ſome material part of ſenſation and motion, this conſideration ſhould engage our earlieſt and cloſeſt attention to the rules juſt mentioned, to prevent the neceſſity of taking ſuch a ſtep. In wounds of theſe parts, the limb muſt be put into ſuch a poſition, that they may ſuffer as little divulſion as poſſible. More than ordinary care ſhould be taken to avoid

avoid expoſing thoſe wounds to the cold air. No oleaginous or cold applications ſhould be made to them: and it is moſt adviſable to uſe the fomentation before the removal of the dreſſings; as through them it will give a genial warmth, and have its proper effect, without expoſing the wound to the influence of the air; but notwithſtanding all precaution, a ſlough, thicker or thinner, will be ſuperinduced upon the tendon, which the terebinthinous application will digeſt off, better than any I know; and then the wound will ſoon be healed by the common treatment.*

Authors

* *Augenius* writes of a taylor, who died in conſequence of a prick with his needle, between the nail and fleſh at the end of his thumb.

Amatus Luſitanus mentions a ſimilar caſe, in an old woman, which was attended with convulſions, &c.

Glandorpius relates a caſe, where the tendon not being totally divided, dreadful ſymptoms enſued, which ceaſed upon the total diviſion of it, after all other means were tried in vain.

The ſame author alſo gives us this memorable hiſtory. A nobleman, of a *cachochymic* habit, and infected with the *lues venerea*, received a wound into a nerve in a duel, which was ſoon attended with pain, fever, delirium, &c.

At

Authors, before thoſe of the preſent age, have recommended ſtitching the *tendo achillis*, when totally divided; but the moſt eminent and experienced ſurgeons now, diſapprove that practice: and evidently with good reaſon, adviſing to have the ends of the divided tendon brought, and kept, as near together as poſſible, by a favourable poſition of the limb; which is effected, by bending the knee and heel, and extending the foot, to ſuch a degree as is eaſy to the patient; keeping it ſo, after dreſſing the wound, according to the preſcribed rules, by the following bandage, firſt equaliſing the ſmall of the leg with ſoft, well adapted compreſſes of linen cloth,

At length a total diviſion of the nerve was propoſed, but not complied with; ſoon after, an *emproſthotonos*, and other direful ſymptoms, ſupervened, and he died miſerably, without reſource.——The ancients uſed the word nerve in too great a latitude; ſometimes they meant tendon by it, but now its acceptation is fixed, and it is not uſed ſynonimouſly.

Many years ago a poor woman was my patient, on acount of a ſlight puncture with her needle, between the nail and fleſh of her fore-finger, which was attended with very violent ſymptoms; and ſhe loſt the whole of the firſt joint, notwithſtanding the utmoſt care to preſerve it.

cloth, fine tow, or quilting cotton, the latter of which is preferable to the other. Begin the bandage, by making a few circular turns of a roller, of a ſufficient length and breadth, about the thigh, juſt above the knee, paſſing it round below two or three times, deſcribing a figure of 8; deſcending then in regular ſpiral revolutions, with ſmall edgings, that it may lie even and eaſy, down to the ancle; making there a few turns, as about the knee, proceeding ſpirally to the toes; where, after making a few circulars, the roller is to be faſtened with a needle and thread, reflecting it from thence upon the ſole of the foot, up the back part of the leg, to the circulars above the knee; ſecuring it well there, and in the whole courſe of it, with a needle and thread; taking particular care, all the while, to have the limb kept in its true favourable poſture, by proper aſſiſtants; and when this is done, it is neceſſary to have it reſted upon a pillow in bed, ſtrictly injoining the patient's own care, to keep the limb quiet. The application of this bandage may be begun upon the foot, at the toes, leaving a portion of the roller there,

to

to be reflected, ſecured, and fixed, as before deſcribed.*

Though I have ſucceeded by both methods, yet I muſt give the preference to the preſent practice, without ſtitching; however, ſhould ſtitching be thought by the ſurgeon, under any particular circumſtance, more adviſable, inciſion muſt be made, to come fairly at the end of the tendon, that is retracted with the muſcle, when the diviſion of it is at any conſiderable diſtance from the muſcle, doing the ſame below, if found needful; and then, with the fingers or *forceps*, firſt putting the limb into the poſition deſcribed, favouring the approximation of the ends, they are to be brought into contact, or as nearly ſo as poſſible, keeping them together by the interrupted ſuture, made with the needle appropriated to this uſe; after which, the ſticking plaſters, applied as have been directed in uniting wounds, in order to aid the ſtitches, may prove, in ſome meaſure, uſeful, and the bandage, &c. as juſt

* See in Vol. III. the concluſion of the caſe, in which the head of the *os femoris* was ſeparated at the neck

juſt now deſcribed are to be uſed and attended to. By which ſoever method the cure is performed, great care and caution muſt be obſerved, when the wound is healed, that the extenſion may be made very gradually, in order to have the tendon acquire its former length, without running the hazard of deſtroying its union, before the intermediate ſubſtance is grown ſufficiently firm. And in the cure of wounds of theſe parts, ſtrict regard ſhould be paid to the non-naturals.

There are two caſes of ruptured tendons in the *Mem. de l'Acad. Roy. des Sciences*, in which, the ſkin was not broken; and the cures were performed by proper bandage, and poſition of the limbs. I have had one ſuch, under my care, which ſucceeded as happily, by the ſame management.——Monſ. *Petit*, in his treatiſe *Des Maladies des Os*, mentions a ſoldier, who ruptured both at once, in jumping, without hurting the ſkin, and which he cured in the ſame manner.——See profeſſor *Monro's* own caſe, in the Eſſays and Obſ. Phyſical and Literary, vol. 1, in which he deſcribes a machine, of his own invention, to anſwer more effectually the end of our bandage.——I never ſaw the tendon, commonly called the *ligament*, belonging to the *patella*, ruptured, before the laſt

year; and then, in a ſhort ſpace of time, two ſuch caſes came under my obſervation: the firſt was in a young woman, who about eleven months before, going out of one room into another, ſtruck her knee againſt the door-poſt, diſlocated the *patella*, fell backward at the ſame inſtant, and ruptured the tendon. When I firſt ſaw her, the limb was much emaciated, great pain attended the joint, with an inability of extending the leg, and ſhe appeared abſolutely incurable. The other accident of this kind happened to a gentleman of our faculty, aged about forty, by a fall from his horſe; but by keeping his limb properly ſupported, &c. he recovered conſiderable uſe of it. Both theſe caſes were ſeen by ſeveral ſurgeons, who had never obſerved the like before.

Notwithſtanding my apprehenſions in the young woman's caſe, I adviſed good friction with a fleſh-bruſh, and a warm embrocation to be well rubbed into the whole limb twice a day, having the limb ſupported with a light, well adapted, ſteel machine; which had ſo good effect, that in length of time ſhe recovered ſo much uſe, as to walk about her buſineſs, without pain, aſſiſted by an under-hand cane, beyond expectation.

OF

POISONED WOUNDS, VENOMOUS BITES, &c.

WE are not to apprehend meeting with poiſoned wounds, except among Indians and barbarians, whoſe practice has been to poiſon their weapons of war. It may be a difficult matter to diſtinguiſh, by their appearances, poiſoned from other wounds, which may have a very ill aſpect, and be attended with the moſt violent ſymptoms, as we have ſeen, ariſing from various other cauſes, without any ſuſpicion of poiſon; but when there is ground for ſuch ſurmiſe, as ſoon as we are called, we ſhould enlarge the wound, if it is ſmall, uſe the ſtrongeſt ſuppurative applications and warm *cataplaſms*; keeping the wound open, as long as we can; dreſſing, at leaſt, twice in a day, and giving ſuch *alexipharmics*, as the nature of the poiſon requires, which demands particular inquiry and attention, to diſcover whether it is of the vegetable, or mineral kind.——I have been told, the Indians dip their arrows into the juices of

putrid human bodies, looking upon them, ſo prepared, as the moſt deſtructive; and, I think, lord *Verulam* has ſomething to this purpoſe in his writings.——*Theophraſtus* ſays, the *Æthiopians* dipped their arrows into the juice of poiſonous plants; and *Matthiolus* tells us, that arrows or balls, impregnated with the juice of white *hellebore*, cauſe ſpeedy death.——Some *Europeans* have been ſuſpected of ſuch diabolical practice, with *arſenic*, *merc. ſublim. corroſ.* &c. but it is to be hoped, in theſe days, there is no foundation for it, in any chriſtian country, or where they are not devoid of all ſentiments of humanity.

In the bite of a mad animal, or venomous creature, it would be no irrational practice, though too ſevere for ſome, to have a piece of fleſh inſtantly cut out, including the bite; or to have the *actual cautery* applied, in order to prevent the entrance of the poiſon into the blood; treating the wound afterwards, as has been directed, and having recourſe to *alexipharmics*. In the bite of a mad dog or other animal, the *pulv. antilyſſus*, *cinnabar & muſk*, mercurial medicines, &c. have their advocates.

vocates. We may read *Mead*, *Layard*, *James*, *Nugent*, *Deſault*, and *Choiſel*, upon this ſubject. I believe I have uſed, more than a hundred times, the *decoct. ad morſ. canis rab. batean.* prepared with the addition of *ſage* and aſh-coloured *liverwort*, without a ſingle miſcarriage, when the patient took it regularly, before the appearance of the *hydrophoby* or other ſymptoms of madneſs; but after having read *Deſault's* book, about twenty years ago, I generally uſed mercurial ointment as he directs, at the ſame time, endeavouring to avoid a *ptyaliſm.*——It appears by the *Mem. de l'Acad. Roy. des Sciences*, that Monſ. *Tauvry* was acquainted with mercurial unction on this occaſion, about the concluſion of the laſt century.

The bite of a viper is effectually cured, as has been fully proved, by rubbing warm *olive oil* long and plentifully upon the part: and viper oil or fat, which ſhould be freſh, is a ſovereign remedy againſt the ſtinging of bees, waſps, hornets, and other venomous inſects.*

* Concerning poiſoned wounds, &c. *Celſus*, *Paré*, *Schenkius*, *Heiſter*, *&c.* may be conſulted.———*Cælius Aurelianus*

OF THE ACCIDENTS BELONGING TO WOUNDS.

AN *hæmorrhage*, more or leſs, is a concomitant, or inſeparable accident, accompanying wounds; but what has already been ſaid upon this head, in the treatment of wounds of the blood-veſſels, and previous to that, what relates to the uſe and efficacy of *ſtyptics*, &c. made it unneceſſary to ſay any thing more here to this purpoſe.*

2. Were

Aurelianus has written more fully upon the *hydrophoby*, proceeding from canine madneſs, than any of the ancients.——Thoſe who are deſirous to ſatisfy their curioſity farther concerning this kind of poiſon, may conſult *Hildanus*, *Amatus Luſitanus*, *Zacutus Luſitanus*, *Baccius*, *Albertus Magnus*, *Horſtius*, *Alſaravius*, *Palmarius*, with other obſervators, and *Comment. Van Swieten in Aphoriſmos Boerhaavii.*

* In lord *Clarendon's* Hiſtory of the Rebellion, book 6, mention is made of ſome perſons, who it was ſuppoſed by the ſurgeons, had the bleeding of their wounds reſtrained and prevented from proving mortal, by being ſtripped and expoſed to the cold air all night, in the field of battle after Edge-Hill fight.

2. Were we to diſcourſe on the article of *contuſion*, enumerating its various effects and conſequences in the different parts of the body, both internally and externally, we ſhould exceed our deſign, which is to conſider it only as an object in the cure of wounds, coming immediately under inſpection; but the effect of a blow, by an obtuſe inſtrument, occaſioning a wound, may extend even to the *faſciculi* of muſcular *fibres*, connected by cellular membrane, breaking the *capillary* veſſels, innumerably interſperſed in the muſcular *compages*; and this conſideration demands particular attention in contuſed wounds, when the patient's complaint exceeds what we ſee cauſe for, and gives us reaſon to ſuſpect latent miſchief. As the contuſed and lacerated veſſels, apparent in the wound itſelf, are impediments to the reunion or healing of it, it is our buſineſs to aſſiſt nature in the ſeparation of them, by moderately warm fomentations, digeſtives, and *cataplaſms*; ſcarifying ſome, and cutting off other parts, that have loſt their vitality. Bleeding, gentle purging, and an exact regimen, are to be obſerved; and the patient

cannot take too freely of reſolving and attenuating liquors, in order to keep the blood in a proper ſtate of fluidity, to prevent, or remove, obſtructions in the wound and adjacent parts. If great tenſion and inflammation ſupervene, emollient fomentations and *cataplaſms* are adviſable. A decoction of *flor. eham. & ſambuc.* in new milk and water, makes a good fomentation; and bread, formed into a proper conſiſtence with it, and a little fine *ol. olivar.* is a ſuitable *cataplaſm* upon this occaſion; before the application of which, a plaſter of *cerat. alb.* ſhould be applied over the dreſſing of the digeſtive to the wound, which may be ſoftened with the *ſamaritan balſam*, before recommended, and uſed warm, not hot: but ſhould there be a tendency to a ſpreading *gangrene*, as ſometimes happens in wounds violently contuſed, eſpecially in conſtitutions where there is a depravation of the fluids, and laxity of the ſolids, then the *fot. commun.* made *antiſeptic* with the addition of *ſal. ammon. crud.* or *ſpirit. mindereri*, and a *cataplaſm*, compoſed of this fomenting liquor, bread, *farin. hord.* and *ſpec. pro cataplaſmat. e cymino*, with the addition

addition of *ung. ſimp.* or *ung. e florib. ſamb.* to keep it properly ſoft, are better accommodated to the purpoſe, with the uſe of the *bark* and *camphire*, if the patient is very languid. All theſe matters muſt be regulated by the ſurgeon's conſtant attention: no invariable rules can be preſcribed.

An inflammation, attending a wound, may prove of very ill conſequence, eſpecially when it is accompanied with contuſion and laceration of the parts; and may terminate in a *gangrene*, if not timely prevented.—Gentle dreſſings, applied to the wound itſelf, and emollient fomentations and *cataplaſms* are proper; veneſection, lenient purgatives, and cool liquid diet, muſt be uſed plentifully, paying due regard to the non-naturals. If the inflammation proves of the *eryſipelatous* kind, which frequently happens in wounds, the ſame general rules are to be obſerved.*

The

* An ointment, prepared according to art, with the pureſt white part of *elder flowers* boiled in freſh *axungia porcina*, in a tinned pan, with the gentleſt degree of fire, ſtirring it all the while very carefully, to preſerve its whiteneſs and fragrance, free from *empyreuma*, is a neat and

The immediate ſenſation of pain, upon receiving a wound, is from the diviſion of the nervous fibrils, then from their divulſion; whence it may extend to ſome diſtance from the wound itſelf, which generally is not of long duration, nor much to be dreaded; but afterwards, pain in wounds, from various cauſes, may ariſe to ſuch a degree, as to effect the whole body; diſturbing all the operations of the animal œconomy, and nervous ſyſtem,

and efficacious application in inflammations: and with the addition of *cera alba* makes a *cerate*, inferior to none, for ſuch purpoſes,——In *eryſipelatous* caſes, *camphire* may be added to the ointment, firſt reduced into fine powder, and then well rubbed and incorporated with *ol. olivar. optim.* giving it the conſiſtence of a liniment, to be applied with a feather, and a plaſter of the *cerate* over it. Theſe applications I have long uſed, much to my ſatisfaction.——In order to prevent an *empyreuma*, and the ointment from being robbed of its fragrance, and pure whiteneſs, it may be made in *balneo mariæ*. I have had it lately prepared for me in that manner, by pouring the *axungia* boiling hot upon the flowers, in a well glazed earthen pot, keeping it cloſe covered eight or ten hours, in a kettle of boiling water.

See *Goulard's* Treatiſe upon the Virtues of Lead, which he too highly extols; on which account read *Aikin's* judicous Remarks upon it.

ſyſtem, becoming by its exceſs and continuance, of the moſt dangerous conſequence. It is the moſt violent ſtimulus, it breaks the patient's reſt, brings on fever, inflammation, convulſions, &c. therefore all endeavours ſhould be uſed to remedy this grievance, as ſpeedily as poſſible; and, in order to effect this important purpoſe, we have to conſider the different cauſes of pain, that we may avoid falling into miſtakes in practice. It may be owing to ſome extraneous body, vellicating the ſenſible parts;——to the application of acrimonious medicines;——to the half, or partial, diviſion of a nerve or tendon;——to inflammation and tenſion, diſtracting the nervous *fibrillæ*;——to too ſtrait bandage, or an ill poſition of the affected part. The nature of the cauſes plainly indicates the means of removing this dreadful evil; as the extraction of the extraneous body;——the application of emollient and anodyne medicines, ſuch as a white-bread poultice, &c.——the total diviſion of the nerve or tendon, if all other attempts fail;——to take off the inflammation and tenſion, by the methods already preſcribed;——to alter the bandage,

dage, making it only retentive; and to change the poſition of the limb or part: but when our deſign of removing this threatening ſymptom, by theſe meaſures, is not ſoon anſwered, it is neceſſary to have recourſe to opiates to aſſuage it, given in proportion to its violence, till the cauſe can be effectually removed.*

Convulſions are the laſt ſymptoms we have to encounter, and are to be looked upon as the moſt formidable attending wounds. They are involuntary contractions of the muſcles, proceeding from various cauſes, affecting the nervous ſyſtem, particularly from irritations of the nervous or tendinous parts. They may ariſe from inanition, when profuſe *hæmorrhages* debilitate the circulation, conſequently the nervous influence, and every animal function ſuffer; and the ſame inordinate muſcular

* From what has been ſaid upon this article, we may obſerve, how neceſſary it may ſometimes be found, when we are obliged to make painful applications, to uſe lenients and anodynes, to mitigate the pain, as much as we can, and prevent inflammation.——See Diſſertations upon Pain and Anodynes, by Meſſ. *Louis*, *Guyot*, and *Fabre*, in the *Prize Mem. of the Roy. Acad. of Surgery* for the year 1745.

muſcular motions may be produced by repletion. The methods of cure are indicated by a proper attention to the cauſes whence they proceed; as, by removing the offending body, when they proceed from irritation; by giving nutrimental broths liberally, when from inanition, and by evacuations, eſpecially veneſection, when they ariſe from plenitude of the veſſels; living upon very low diet. *Hippocrates* ſays, "*Morbis a plenitudine ortis* "*mederetur evacuatio, illis vero qui inanitione* "*fierent mederetur repletio.*" There is a remarkable caſe to this purpoſe in *Lower de Corde*, pag. 75, *Edit. Septim.*

Celſus and others ſpeak of four kinds of *ſpaſms* or convulſions, that may happen in wounds. 1. The *emproſthotonos*, which draws the neck and other parts of the body forwards. 2. *Opiſthotonos*, a motion directly oppoſite to that. 3. *Tetanus*, which is that ſpecies of *ſpaſm*, wherein we obſerve both anterior and poſterior parts of the body affected, becoming rigid and inflexible. 4. The *ſpaſmus cynicus*, ſometimes called *riſus ſardonicus*, is that kind, in which the mouth is drawn awry.

The

The locked-jaw is to be conſidered as a ſpecies of convulſion, and uſed to be looked upon as a mortal ſymptom in wounds, without reſource, till *opium*, that heavenly remedy, was found to be a cure for it; of which we have ſeveral inſtances, in the *London Medical Obſervations and Inquiries*.——It appears, from what *Hippocrates* has recorded in the ſeventh book of his *Epidemics*, that this kind of convulſive diſorder had not paſſed unobſerved by him, but he deemed it a mortal ſymptom. He mentions the caſe of a maſter of a ſhip, where, in conſequence of a wound upon his finger, an *opiſthotonos* attended a locked-jaw, which proved fatal.*

OF

* See doctor *Chalmers's* account of the *opiſthotonos & tetanus*, in the 1ſt vol. of the *London Medical Obſervations and Inquiries*. He is a phyſician of eminence at *Charles-Town*, in *South-Carolina*, in which climate theſe convulſive diſorders are much more frequent than in *Europe*.

Pachequus, a very eminent phyſician at *Montpelier*, in ſome remarks communicated to *Riverius*, which he made at the ſiege of that city, ſays, " that many of the ſoldiers " wounded in the hands, were ſeized with convulſions of " the temporal muſcles, and died ſoon after: and that " ſome of them could not open their mouths;" which deſcription

OF THE EXTRACTION OF EXTRANEOUS BODIES.

THE extraction of extraneous bodies, is a part of ſurgery that demands particular conſideration and attention. Under the denomination of extraneous bodies, are compriſed thoſe that will not unite with our ſolids, but hinder the reunion of the parts, wherein they are lodged, whether they be of metal, wood, ſtone, cloth, &c. and looſe fragments of bones, dead contuſed fleſh, coagula of blood, are to be conſidered as extraneous bodies; poiſon alſo may be included, but we ſhall principally attend to ſuch, as may be taken hold of and extracted by hand or inſtrument.

The ancients had opportunities of ſeeing a greater variety of extraneous bodies in wounds, than we have, becauſe of the various deſtructive inſtruments of war they uſed; whereas

ſcription exactly correſponds with the ſpecies of convulſion now denominated the locked-jaw, for which no remedy was then known.—Vid. *Prax. Med. Riverii.*

whereas what we uſe are chiefly cutting weapons and ſhot. The inſtruments employed in extracting theſe bodies, we may ſee delineated in *Scultetus's Armamentar. Chirurg.* taken from authors who have treated on this ſubject, as well as thoſe of his own invention; but the modern military ſurgeons have, with good reaſon, much reduced the number.

After having diſcovered the extraneous body, the place for extraction of it, is that by which it entered; unleſs there is apparent danger of wounding ſome large blood-veſſel, or other part of conſequence, or it be lodged near the oppoſite ſide of a limb, or other part of the body; or being of ſuch a ſhape, that it cannot be returned the ſame way it entered, without great laceration of the parts; as a bearded arrow, for inſtance, which requires to be taken out the oppoſite way to that it entered, or the wound to be ſufficiently enlarged, to prevent laceration.*

In

* See *Gilpin's* Life of *Ziſca*, that famous *Bohemian* general and reformer, who had his eye torn out of its orbit, in the extraction of a barbed arrow.

In order to extract the extraneous body, in the firſt manner propoſed, we are to place the patient, as nearly as poſſible, in the poſture he received it, for it is plain, thus, the paſſage will be more direct. *Geſner* mentions a very pertinent inſtance, of a ſurgeon, who, after many fruitleſs attempts to extract an arrow, aſked the patient in what poſition he received it, and after underſtanding it was on horſeback, he placed him in a riding poſture, and immediately drew out the weapon without difficulty.

When the orifice of the wound is ſo ſmall, that we cannot commodiouſly introduce inſtruments, to extract the extraneous body, we are to enlarge it, if practicable, without injuring any large veſſel, nerve, or tendon; and after having gained good, clear hold of it with the *forceps*, we muſt proceed cautiouſly, firſt moving them from ſide to ſide, upwards and downwards, before we begin to draw, in order to looſen it, and dilate the parts; then extract it gently and gradually, to avoid lacerating them, applying the left hand to the place, whence the ſubſtance is to be extracted, in order to keep the member or

part firm; and, under ſome circumſtances, the operator may feel the courſe of the inſtrument, and be better directed, by this means, what turns to make, to facilitate the extraction.

When the caſe is ſo circumſtanced, that we are obliged to attempt extraction of the foreign body, on the oppoſite ſide to its entrance, we are firſt to conſider what parts we have to cut through, before we come at it, and when we know there are none in the way, that it is dangerous to wound, we may cut directly and boldly upon it, making the aperture in proportion to the ſize of the body, when we can judge of that; however, too large, rather than too ſmall, to avoid putting the patient to unneceſſary pain, and contuſing and lacerating the parts in the extraction of it; proceeding then to finiſh the operation as directed.

The moſt ſeaſonable time for performance of this operation, is generally immediately after the wound is inflicted, before inflammation and tenſion come on, which, adding to the ſenſibility of the parts, muſt conſequently occaſion more pain in the doing of it; beſides,

ſides, whilſt the extraneous body remains in the part, it may excite violent ſymptoms by irritation, as we may ſee in the caſe related by Mr. *Wiſeman*, of a nobleman's ſervant, who was ſhot by a highwayman: and *Bidloo* in his *Exercitat. Anatomic. Chirurgic.* gives an account of a ſoldier in the *Engliſh* army, that loſt his life through the obſtinacy of a ſurgeon, who refuſed to cut upon and extract a ball, which lay very favourably for the operation, between the fourth and fifth rib.—— A few years ago, the following caſe came under my inſpection.

A young man, as he was earneſt at his work, requiring the uſe of his knee, was ſenſible of ſomething piercing the top of his thigh, three or four inches from the joint, but could not diſcover what it was. An able ſurgeon attempted, ſoon after the accident, to find what he apprehended might be lodged therein, and directed by the appearance of a puncture not bigger than a pin-hole, and by the patient's complaining of an extreme pungent pain upon preſſure, he made inciſion in ſearch of it, but in vain. Many weeks after, I was called into conſultation,

the ſymptoms becoming very threatening; a conſiderable fever was raiſed, violent pain attended the thigh, and he was not able to ſet a ſtep, without having the whole limb thrown into ſpaſms; but the ſwelling and inflammation were inconſiderable. We examined the limb with the utmoſt care, and upon preſſure, ſeveral inches from where the puncture was, under the *faſcia femoris*, he complained of a very acute pricking pain, which inſtantly brought on the ſpaſms. Theſe conſiderations determined us, without heſitation, to make inciſion upon that ſpot, through the *faſcia*, where we fortunately diſcovered and extracted a needle, about two inches long; upon which the ſymptoms vaniſhed, and he was ſoon cured.

Notwithſtanding the obvious diſadvantages of ſuffering extraneous bodies to remain in wounds, yet if tenſion and inflammation have already ſeized the parts, the orifice of the wound being alſo cloſed, the ſubſtance lying deep, and the patient weak and languid, the pain which the operation, under theſe circumſtances, muſt neceſſarily occaſion, probably would greatly increaſe the inflammation, raiſe

raiſe the fever to a high degree, and perhaps throw the patient into convulſions; therefore it is adviſable to poſtpone it to a favourable opportunity, applying emollients and anodynes, and paying due attention to the patient's ſtate and condition in all reſpects.

Should a large extraneous body happen to be lodged deep, and firmly fixed, ſo that it cannot be brought away, without great laceration of the parts, nor inciſion ſafely made, to facilitate the extraction, it is prudent not to venture to attempt it, but to wait, till it looſens by ſuppuration; which ſhould be promoted by emollient *cataplaſms*, and ſuch applications; then, there is reaſon to expect, it may be extracted with more eaſe and ſafety. There is a memorable caſe to this purpoſe in the *Journal des Sçavans*, for the year 1735.——Caſes of this nature call upon the ſurgeon for deliberate conſideration and attention.

Upon a ſuppoſition that a foreign body is lodged in a part, though it cannot be diſcovered, we ſhould not torment the patient, by cutting at random to find it, becauſe we

may do much more harm by the ſearch, than its continuance in the part would occaſion; for we have inſtances of various kinds of ſubſtances being lodged in different parts of the body a long time, without doing any remarkable injury.——*Hippocrates* relates the caſe of a perſon, who was wounded in the groin with an arrow, the head of which remained in the part, yet he found no inconvenience from it, till ſix years after, when it was diſcovered, inciſion made upon it and extracted.——*Deckers* tells us of a gentleman, who was wounded in the right *hypochondrium*, and, thirty years after, had the ball extracted at his knee.——*Alexander Benedictus* ſays, that a *Greek* was wounded on the right temple with a dart, at the ſiege of *Colchis*, and taken captive by the *Turks*; after the wound was healed, he lived twenty years in ſlavery, then obtained his liberty, and came to *Sidon*; five years after that, as he was waſhing his face, he was ſeized with a fit of ſneezing, and diſcharged, at one of his noſtrils, a piece of the dart, with the iron point of a conſiderable length.——*Hildanus* gives an inſtance of a piece of a ſword, that

was

was lodged in a gentleman's face ſeveral years, before it was extracted from an *abſceſs* then formed: and he relates a caſe, in which a ball remained ſix months between the ſkull and *dura mater*, without producing any bad ſymptom.——*Amatus Luſitanus* ſpeaks of a drunken courteſan, who, in a fray, was wounded with a long ſharp-pointed knife; in which caſe, the wound healed, and ſhe found no defect in her animal or rational faculties; but eight years after, dying of a fever, and her head being opened, a large piece of the knife was found between the ſkull and *dura mater*.——Monſ. *Le Dran* in his treatiſe on gun ſhot wounds, ſpeaks of his own knowledge concerning the lodgment of a ball near the *ſella turcica*, the patient dying ſuddenly a year after the accident.—— An eminent ſurgeon of my acquaintance told me of a caſe, in which a ball was extracted, and ſome months after, a piece of cloth was expelled, till which time the wound kept open, but was then ſoon healed.—— In *Chelſea* hoſpital, an old ſoldier had a piece of rag diſcharged from a wound, that it had kept open many years, which then healed

without any trouble.——Hence we ſee, nature often exerts herſelf, to get rid of an extraneous body, by ſuppuration, or raiſing an *abſceſs* in the part where it is lodged, and by that means expels, or brings it near the ſurface, ſo as to be eaſily extracted.——On this occaſion I may alſo relate, from a gentleman that knew it, the caſe of a boy in the *Hôtel Dieu* at *Paris*, who, three weeks after ſwallowing a long needle, in a piece of bread, had an *abſceſs* formed a little below the navel, on the right ſide, and the needle extracted from it.——*Ruyſch*, *Purmannus*, and *Hoffman*, take notice of ſuch caſes.——*Wiſeman* inveighs againſt too much endeavouring to extract extraneous bodies, giving inſtances of nature's efforts to relieve herſelf, yet when they can, with convenience and ſafety, be removed, they ſhould not be left.*

It

* *Formius*, a ſurgeon of great note and experience, who has been mentioned, communicated to *Riverius* a very ſingular caſe indeed, wherein a ſmall leaden ball was fixed and remained ſeven years in the body of the *os calcis*; in conſequence of which, the wound degenerated into an ill conditioned ulcer, attended with great caries of the bone. After denudating the bone, by two applications

of

It is no irrational ſuppoſition, that a weapon ſhould pierce the *aorta* or *carotid*, and ſtop the aperture ſo cloſe, that little or no blood could immediately eſcape, the patient ſurviving the infliction of the wound a ſhort ſpace of time, though death would inſtantly follow the extraction of it; and probably this might be the caſe of *Epaminondas*, as recorded by *Cornelius Nepos*, who, fighting againſt the *Lacedæmonians*, was ſenſible of having received a mortal wound, and apprehending he ſhould die, as ſoon as the head of the lance was drawn out of his body, it was kept in, till he was told the *Bæotians* had conquered, upon which news, ſays he, "I "have lived long enough, for I die uncon-"quered." The deadly weapon was then extracted, and the renowned general expired

of a cauſtic, he found it neceſſary, in order to come at and extract this extraneous body, to make uſe of the trepan; then it was eaſily extracted, and the ulcer ſoon cured. He alſo mentions a caſe, in which a piece of a ſword remained many years in a perſon's arm, the wound being ſuffered to cloſe without ſearching for it at firſt; at length it appeared under the cicatrix, on the ſuperior part of the arm, where it entered, and was then cut upon, and extracted covered with ruſt.

pired inſtantly.——*Petrus de Largenta* confirms the other part of the ſuppoſition, by a narrative he gives of a man, who, after being wounded in the neck, the arrow ſticking in one of the *carotids*, ſpoke very well before the extraction of it, but died immediately after.*

OF

* Some eminent practitioners, of former ages, have looked upon the operation of extracting extraneous bodies rather unneceſſary, making great account of their ſecret applications, which they termed *attrahents*, but are to be looked upon only as *ſuppurants*; and what confirms this opinion is, that many of the medicines, for this purpoſe, mentioned in *Foreſtus*, *Mangetus*, *&c*, are no more than common digeſtives.

OF THE NON-NATURALS, WHICH ARE OF GREAT CONSEQUENCE TO BE OBSERVED IN CURING WOUNDS, WHETHER ACCIDENTAL, OR AFTER CAPITAL OPERATIONS.

(1) THE atmoſphere the patient breathes in, ſhould be dry, with a temperate degree of heat, free from all noxious vapours. Moiſt and cold air obſtructs perſpiration, whence proceed various diſorders; and intenſe cold contracts the veſſels, and coagulates or thickens the fluids; and when exceſſively hot, it produces putrefaction, and large ſuppurations with acrimony. The inconveniencies ariſing from exceſſive cold, are to be remedied by fires, and for thoſe proceeding from immoderate heat, the patient's room is to be cooled, by opening a window, admitting the breezes and freſh air, placing large pots of water in different parts of it, with fragrant aromatic herbs and flowers in them, ſtrewing ſome upon the floor, which will diffuſe refreſhing and vivifying *effluvia*, to correct the ill effects of putrid exhalations, affecting

affecting the lungs, and animal œconomy. It often happens in hoſpitals and ſhips, where great numbers of patients are crouded together, that ſuch a corrupt and ſtagnant air cauſes various diſorders, and the worſt kind of fevers; therefore thoſe who have the care of the wounded, cannot be too ſolicitous to have them breathe a pure, freſh, untainted air, impregnated, if poſſible, with a grateful fragrance, to refreſh the ſpirits; ſeeing that the ſick-room be kept neat and clean: and in order to correct putrefaction, vinegar may be ſprinkled upon the floor, and upon the bandages, mixed with lavender-water, or ſome ſuch pleaſant ſcented liquor; vinegar is the beſt antiputreſcent we have.*

OF

* See what ſir *John Pringle* and doctor *Donald Monro* ſay concerning this important matter, in their account of diſeaſes of the army; particularly the former gentleman's obſervations on the jail and hoſpital fever.

OF DIET.

(2) DIET, in the cure of wounds, as well as diſeaſes, is often of the utmoſt conſequence to be attended ſtrictly to. *Hippocrates*, *Celſus*, and the beſt writers ſince their days, enjoin a ſpare diet in wounds, in order to prevent inflammation, fever, &c. ſaying, it ſhould be food that affords good juices; by which muſt be meant, ſuch as will ſoon digeſt, and be eaſily aſſimilated; not of a glutinous nature, that would make our fluids viſcid, or apt to become putrid and acrid, tending to produce obſtructions, inflammation, &c. It ſhould principally conſiſt of the vegetable, farinaceous kind, and what animal food is allowed, ſhould be confined to weak broths, except under particular circumſtances, that will be ſpecified. Barley-broth, oatmeal-gruel, ptiſan, almond-emulſion, thin chicken or veal broth, &c. ſhould be taken freely. The patient may eat boiled or roaſted apples, boiled pot-herbs, ſuch as ſpinage, lettuce, &c. avoiding every thing of a poignant, ſtimulating

lating quality, for the reaſons we have given; as fleſh-meat high-ſeaſoned; all fermented liquors, as wine, beer, &c. or ardent ſpirits; all ſtrong ſoups or broths, and alcaleſcent plants, as celery, creſſes, horſe-radiſh, muſtard, &c. in order to have a ſoft, balſamic chyle, that the blood may be free from acrimony, or tendency to an inflammatory ſtate, productive of fevers, &c. However, in ſome caſes, we muſt take care, we do not adhere too cloſely to theſe dietetic rules, in the cure of wounds. We muſt always have a regard to the ſtrength, weakneſs, and conſtitution of the patient; for if it is a weak, faint perſon, there is a neceſſity of giving good nutrimental broths, and temperate cordials, allowing wine, diluted with water, or even wine alone, as the beſt of cordials to ſome people. The patient's uſual manner of living muſt alſo be conſidered, remembering the old ſaying; Cuſtom is a ſecond nature: and certainly it is ſo; for when a perſon has been inured to a particular way of living, a ſudden and great alteration in it may prove very detrimental, which is evinced by daily obſervation.

When

When the *Dutch* acted in confederacy with us, the *Engliſh* army fed chiefly upon fleſh, and the *Dutch* upon vegetables; and in the different hoſpitals, the wounded men were treated accordingly; but whenever the *Dutch* were carried off to the *Engliſh* quarters, and *vice verſa*, many of both parties ſuffered greatly; the *Engliſh* grew faint and languid with a vegetable diet, and on the contrary, the animal food threw the *Dutch* into fevers.

Our own countryman, the great *Wiſeman*, ſhows the neceſſary latitude to be allowed on theſe occaſions, by ſeveral inſtances, particularly in a perſon, accuſtomed to drink wine too freely, that was bitten on the back of his hand by a monkey; and ſo long as he was obliged to abſtain from that liquor, he grew daily worſe and worſe, but when he was allowed it, he immediately grew better, and ſoon recovered.——*Bonetus* gives us the hiſtory of a young gentleman's caſe at *Paris*, who being confined to broths, ptiſan, &c. and abſolutely forbidden the uſe of wine, to which he was addicted, died of a wound in his thigh, though it was no more than a ſimple

ple one of the fleſhy parts, as appeared upon examination after death, which was aſcribed to too much abſtinence.——Profeſſor *Monro* ſpeaks of a cook at *Edinburgh*, who had the cartilaginous part of his noſe cut off, and loſt ſo much blood, before he ſaw him, that he was ſcarce able to ſupport himſelf; after ſtopping the *hæmorrhage*, and dreſſing the wound, he ordered him broths, allowing him a moderate quantity of wine; however, according to his cuſtomary way of living, they were not ſufficient for him; he continued faintiſh for ſome days, complaining of great pain in the wound, and was ſeized with a *diarrhœa*; his wife then ſecretly gave him drams, to which he had long accuſtomed himſelf, and they had ſo good an effect, that his ſymptoms immediately abated, and he was cured in a ſhort time.

The ſeaſon of the year is likewiſe to be conſidered in reſpect to diet, in the cure of wounds; thoſe kinds of things of a poignant nature, which we have cautioned againſt the uſe of, have worſe effects in ſummer than in winter; when indeed, ſome of them may prove beneficial in ſtimulating the circulation,

tion, which might become too torpid, for want of ſuch aſſiſtance.

The laſt thing we have to conſider, in relation to diet, is the diſeaſe the patient may labour under, when he receives the wound, or the ſymptoms that may attend it. If he is weak, or hydropic, ſtrengthening food, wine, &c. muſt be allowed; but if he is ſtrong, plethoric, and feveriſh, a ſpare diet is ſtrictly to be obſerved in general. Hence we may ſee, that according to different circumſtances and ſymptoms, different regimens muſt be preſcribed: and the ſame may be ſaid of medicines, which require as much variation. In order therefore to preſcribe properly, upon ſuch a variety of occaſions, the ſurgeon, as we have hinted, muſt have a competent knowledge of the animal œconomy, of diſeaſes, and of the *materia medica.**.

* Read *Arbuthnot* upon the Nature of Aliments; to which treatiſe are added practical rules of diet in the various conſtitutions and diſeaſes of the human body.

SLEEP AND WATCHING.

(3) THERE is nothing refreſhes a perſon like ſleep. The want of it cauſes the greateſt fatigue and anxiety, and is frequently the occaſion of many diſorders. Pain is the great diſturber of reſt; therefore all poſſible endeavours ſhould be uſed, to remove or alleviate it, as directed under that article; conſidering the reſpective cauſes, whence it ariſes. The narcotic or anodyne remedies, which we have recourſe to, on theſe occaſions, to deſtroy the ſenſation of pain, till we can remove the cauſe, are poppies, and opium, the inſpiſſated juice of thoſe growing in the *Levant*, of which we have a great variety of officinal preparations. Perhaps the ſtrength of the poppies of our own growth, is not ſo much inferior to them, as is generally imagined; for, by making inciſions in ſome fine large heads, growing in my own garden, I extracted the milky juice into proper receivers, where I ſuffered it to inſpiſſate

inſpiſſate with the heat of the ſun; and, by experience, found it nearly as ſtrong as the *Theban* or *Turky* opium.*.

MOTION AND REST.

(4) ALL imaginable repoſe ſhould be recommended to the patient ſuffering under a dangerous wound; but motion is leſs prejudicial to thoſe wounded in the ſuperior, than in the inferior, limbs. The reaſon that reſt and quiet ſhould be ſo ſtrictly enjoined, on this occaſion, is too obvious to want explanation; ſince the agitation of the body is well known to accelerate the circulation of the blood, and conſequently tends to produce inflammation. The patient ſhould not only keep himſelf as ſtill and compoſed as poſſible, but have the room kept free from noiſe, and rather dark, in very dangerous wounds in any part, but more eſpecially in thoſe upon

* See *Jones* on the myſteries of *Opium* revealed: and the late profeſſor *Alſton's* diſſertation upon *Opium*, in vol. v. of the *Med. Eſſays*. Alſo *Young* on *Opium*.

the head. *Hildanus* mentions a melancholy ſtory of a boy to this purpoſe, who was brought to his grave by muſic and dancing in his room, which immediately occaſioned dreadful ſymptoms, though he was before in a very hopeful way of recovery.

RETENTION AND EXCRETION.

(5) IT is an invariable rule, not to preſcribe ſtrong purges for wounded perſons; the ſtimuli of which will be apt to raiſe or increaſe feveriſh ſymptoms, and diſſolve the fluids too much: but, at the ſame time, we muſt be attentive to avoid coſtiveneſs; for, by retention of the *fæces*, they become more and more acrid and putrid, communicating, in ſome meaſure, their pernicious quality to the maſs of blood. We are, therefore, to keep the body ſoluble with laxatives, by the mouth, or in the form of clyſters. *Manna*, *caſſia*, &c. called *eccoprotics*, having a ſtimulating property in a low degree, are the proper medicines to anſwer this purpoſe.

PASSIONS OF THE MIND.

(6) ALL violent paſſions of the mind diſturb the functions of the body; as grief, fear, anger, &c. for which reaſon, they ſhould be ſtudiouſly avoided or ſubdued, that they may not gain an aſcendant or dominion. The patient ſhould be kept free from care, and in all poſſible good humour and tranquillity; for the body always ſympathizes with the mind; and we have inconteſtible examples, proving the pernicious effects and conſequences of inordinate paſſions upon the wounded. *Hildanus* relates ſeveral inſtances, ſhowing their influence; particularly of two perſons, who were wounded in the hand, and, by exceſſive laughter, had moſt violent pain excited in the wounds, extending through the arm quite to the neck, attended with convulſions, which brought them into imminent danger. This great man attempts to account for the effects of riſibility in theſe caſes, ſupported by the authority of *Laurentius Joubertus.*——He alſo gives a narra-

tive of a youth, who had a wound of his head, accompanied with a fracture of the ſkull, in whoſe caſe all things appeared fair, and promiſing; but being provoked to anger, he grew immediately feveriſh, ſoon after delirious, and died in four days.——The ſame author informs us of a man, whoſe *temporal* artery was divided, and the *hæmorrhage* reſtrained for five days, by a *ſtyptic*; but upon being then put into a paſſion, the artery burſt open, and the effuſion of blood was ſtopped with great difficulty.

All acts of *venery* are to be avoided; for they much accelerate the motion of the blood at the time, leaving all the powers of nature in a ſtate of debility, and diſorder the nervous ſyſtem.——*Hildanus* proves the ill effects of venereal pleaſures, in the caſe of a young man, that was wounded on the head; who, ſix weeks after the accident, when the wound was nearly cicatrized, had a fever raiſed by ſuch an adventure, and died in a ſhort time. He farther confirms the bad conſequences, ariſing from this ſource, by an account of a perſon whoſe arm was amputated, and the ſtump almoſt healed; and who,

who, from no other evident cauſe, but ſuch an act of indiſcretion, was ſeized with a fever, attended with delirium, which ſoon ended in convulſions, and death.——*Boerhaave* relates a caſe that proved fatal from the like cauſe.——A practitioner of great note has expreſſed himſelf thus, concerning a patient. "It was by the merciful "providence of God, that he recövered, "having daily commerce with a courte-"ſan."——*Paré* ſays he has obſerved many inſtances of the dire effects of *venery* in wounds.*

Having given a general deſcription of wounds, their *diagnoſis* and *prognoſis*, treatment, &c. as at firſt propoſed, we now proceed to the ſecond part, beginning with wounds of the head; but at the concluſion of this, it may not be amiſs to ſay a word or two concerning *veneſection*, which I had almoſt forgotten; that an evacuation of ſuch conſequence in the cure of wounds, as well

* In reſpect to the non-naturals, we may conſult *Wainwright*, *Burton*, *Sanctorius's Med. Static.*, *Keil's Med. Stat. Britan.*, *De Gorter*, &c.

as in diſeaſes, may not be improperly or indiſcriminately preſcribed. In old, weak, or infirm perſons, or when a great quantity of blood has eſcaped by the wound, it might prove very detrimental; and in ſmall wounds, unattended with ſymptoms of pain, inflammation, &c. it is needleſs; but in wounds, accompanied with ſuch accidents, in a patient ſtrong, young, and plethoric, with a full, tenſe pulſe, it then becomes abſolutely neceſſary to take away blood, as plentifully as his ſtrength will bear; eſpecially in injuries of the head, as we ſhall ſhow, which practice is ſupported by the beſt, and moſt experienced writers.——Indeed, the *French* uſe the lancet more freely than we do; and I am apt to think, from what I have obſerved in their writings, and heard of their practice, from eye witneſſes the moſt rational and intelligent, they ſometimes carry it to a dangerous exceſs, by weakening the vital powers, and relaxing the ſolids ſo much, as to bring on hydropic ſymptoms, hard to remove.——By endeavouring to avoid one rock, they ſplit upon another; robbing the

blood

blood too much of its denſity or red globules, which, by ſome phyſicians, is very ſignificantly called, *ſpoliation.*——Nothing in the practice of phyſic requires more ſkill and judgment, than preſcribing in reſpect to this evacuation.

PART

PART II.

OF WOUNDS, &c. OF THE HEAD.

IN this chapter we ſhall treat not only of wounds, but of the various kinds of injuries, incident to the head, and the *encephalon*; beginning with inciſed wounds of the ſcalp, muſcles, and *pericranium.*

In order to judge, whether only the external parts of the head are injured, we are to conſider the ſize and ſhape of the weapon; whether it has a ſtrait, or a riſing edge, by which the wound was inflicted; the degree of force uſed; and the length and figure of the wound. When it is long, made by a ſtrait, cutting inſtrument, we have reaſon, from the ſpherical form of the ſkull, to fear more

more may be hurt than the teguments; but if the wound is ſhort, to hope it extends no farther, unleſs made with a ſharp-pointed weapon, puſhed with great force; then indeed, though the external aperture is but ſmall, it may even penetrate into the cavity of the ſkull, and injure the *encephalon*, which are the parts therein contained; therefore it is neceſſary to examine the weapon, carefully inſpect and explore the wound, and conſider the ſymptoms, in order to form our judgment.

It was a general rule, firſt laid down by *Hippocrates*, the great luminary of medical ſcience, never to be haſty in delivering a *prognoſtic* in wounds of the head, or to make light of ſuch injuries upon that part, though they may appear trivial; for we have, upon record, many inſtances of ſuch wounds, unattended with any threatening ſymptoms at firſt, that have proved mortal.——*Hildanus* tells us, that a young lady, when warm with dancing, ſtruck her head againſt a poſt, making a ſlight wound, which ſhe neglected two days, being ſenſible of no uneaſineſs; it becoming then very painful, a barber-ſurgeon was

was called to her, who made very light of it; but on the fourth day, ſhe grew feveriſh, and complained of extreme pain; on the ſixth, delirious ſymptoms came on, and ſhe died ſoon after. In this caſe, no external injury of the ſkull could be diſcovered, but upon opening it, extravaſated blood was found, and the membranes of the brain inflamed to a high degree.——*Timæus* ſpeaks of a perſon, who made no complaint for nine days after receiving a wound upon his head; but, on the eleventh day, was ſeized with convulſions, and died on the twelfth.—*Doleus* relates the caſe of a *Hanoverian*, who was firſt ſeized with vomiting, then with a *delirium*, and ſoon after died convulſed, in conſequence of a contuſion apparently ſlight upon his head.——*Bohnius* has a very extraordinary caſe of this kind.——Not long ago, I ſaw a young man, who went about his buſineſs three weeks after receiving a blow juſt above his ear, which ſtunned him at firſt; but there was no external appearance of contuſion. His firſt ſymptoms were giddineſs and pain, convulſions enſued, and art could not ſave him. The *dura mater* was inflamed,

the

the veſſels, running in the plicatures of the *pia mater*, turgid, and ſome ruptured, as we diſcovered upon opening the head.——In *Stalpart Vander Wiel* we find a great collection of obſervations to this purpoſe, from the beſt authors, wherein the patients ſuffered, ſome ſooner and ſome later.

If a wound is made by a blow with an obtuſe weapon, or by a fall againſt ſome hard body, it may prove much worſe in its conſequences, than when received by a cutting inſtrument; the external parts may ſuffer more, beſides the danger of a concuſſion of the brain.——It is not at all to be wondered at, when we conſider the nature of the parts, the connexion, dependance, and communication, between the external and internal, that the brain and its appendages ſhould ſuffer; and that violent ſymtoms or effects ſhould be produced by ſuch cauſes, though they might not originally have had their power extended to the interiors of the head.

If the external orifice of the wound is ſmall, and the wound large in the ſubjacent parts, it is more dangerous; becauſe the matter confined there, becoming acrid and irritating

irritating by inteſtine motion, may inſinuate itſelf far about, producing deleterious ſymptoms, if not timely prevented by ample openings, as I have ſeen.——Such wounds are then to be treated according to general rules.

A ſimple inciſed wound of the teguments of the head, requires no other method of cure, than has been mentioned in reſpect to wounds in other parts; only we ſhould be more cautious in the regimen, keeping the air from the wound, and not dreſſing it with applications of a moiſt, oleaginous nature; which doctrine is agreeable to the opinion of the ableſt ſurgeons, ancient and modern. *Hippocrates* ſays. "*Capitis vulnus nulla re* "*madefaciendum*——." In another place he ſays. "*Malum eſt, humidum in vulnere ca-*"*pitis carnem eſſe, et nimia uligine diffluen-*"*tem*, ——."——It has been obſerved, that wounds of the head are cured with difficulty in *Italy*; probably owing to the ſurgeons in that country uſing oleaginous and relaxing applications; for *Marcus Aurelius Severinus* blames the *Neapolitan* ſurgeons for uſing oil, in wounds of the head; commending the

Malteſe,

Malteſe, for mixing wine with it, to correct its relaxing quality; but even with this correction, it is not a proper application for theſe wounds. *Unguent. e gum. elemi*, with the addition of a little of the pureſt kind of turpentine, or natural balſam, is a good application, and it may be better to apply it upon a pledget over dry, even lint.

If the temporal muſcles, or thoſe inſerted into the occipital bone, or the tendinous or nervous parts, are contuſed as well as wounded, the worſt of ſymptoms are greatly to be feared; which ſhould be prevented, if poſſible, by early attention, or remedied by the treatment, directed in contuſed and lacerated wounds in other parts; though theſe are attended with a greater degree of danger, from their vicinity to the brain, &c. as we have juſt hinted.——In contuſed wounds, there may be extravaſation of blood, or in conſequence of inflammation, collections of purulent matter, that may form *ſinuſes*, which require opening directly, to allow a free exit to the blood or matter, and to give convenient room for the application of proper medicines, by which the ill effects, that might otherwiſe

otherwiſe follow, may be prevented, as may be ſeen in *Berengarius*, *Doleus*, *Muys*, *Sculte-tus*, *Wiſeman*, &c.

When the *pericranium*, or the expanſions of the *tendons*, ſuffer by wound or contuſion, ſeparately or conjunctly, the nervous ſyſtem may be thrown into dreadful diſorders; under which alarming circumſtances, we muſt not heſitate a moment in making an ample inciſion, quite to the bone, taking care that the wound in the *pericranium*, or tendinous expanſion correſponds with that of the ſcalp in laying the bone bare, in order to free thoſe ſenſible parts from that tenſion and inflammation whence the alarming ſymptoms aroſe.—Monſ. *Pouteau*, ſurgeon-major of the *Hotel-Dieu* at *Lyons*, in his *Melanges de Chirurgie*, an excellent work, has two ſingular caſes to this purpoſe.——The caſe of prince *Charles*, ſon of the king of *Spain*, was of the ſame nature; and which the great *Veſalius* treated with ſo much judgment, as to gain him immortal honour at the court of *Madrid*.*

Injuries

* See the Life of *Veſalius*, prefixed to his works by the editors *Boerhaave* and *Albinus*.

Injuries of theſe kinds, upon the head, are frequently accompanied with inflammatory ſwellings to a great degree and extent, having ſometimes the appearance of an *eryſipelas* and *phlegmon* mixed together, and ſometimes they are alſo *emphyſematous*; on which account the general antiphlogiſtic method is to be obſerved.——*Garengeot*, in his treatiſe on the operations of ſurgery, undertakes to lay down, what he calls, a certain ſign of knowing whether the *pericranium*, or only the other teguments are concerned in theſe kinds of tumours; but it is fallacious, and by no means to be depended upon, as a *criterion*. Indeed his manner of reaſoning, upon this point, rather tends to perplex, than elucidate and ſupport his argument.——An extraordinary tumour of this ſort I have mentioned in my obſervations, attending a fiſſure on the *os frontis*.——And, many years ago, I was called to a man of an advanced age, the fourth day after his receiving a ſmall contuſed wound on his right temple. We could not diſcover any injury done to the ſkull; his head and face were ſwelled in a prodigious manner, his eyes were cloſed, and the tumour

appeared complicated of the *eryſipelas* and *phlegmon*. Notwithſtanding our utmoſt endeavours the ſwelling increaſed; he grew delirious, then comatoſe, and died convulſed on the ſeventh day.——I was lately conſulted for a young man, on the fourth day after his having received a contuſed wound, by a fall, on the right ſide of his forehead. The ſurgeon, who was immediately called to him, loſt no time in ſcalping, and treated the patient properly in all reſpects; he could diſcover neither fracture nor fiſſure, but in two or three days, the whole head and neck were tumified, and emphyſematous to an enormous degree; the *emphyſema* extending as far as the *abdomen*, and below the ſhoulder-blades, as if blown up with a pipe. When I firſt ſaw him, his ſenſes were imperfect, ſoon after he became very delirious, and died in convulſions the next day.——Leave could not be obtained, in either of theſe caſes, to examine the heads of the patients after death; people in the country generally having an abhorrence of ſuch uſeful inſpection and inquiry.

When

When the *pericranium* is only cut through, and the bone bare, without contuſion, or loſs of ſubſtance of this membrane, or injury done to the bone, even though the ſcalp is conſiderably ſeparated from it, we may bring the lips of the wound, as near together as we can; keeping them in proximity, by the dry, rather than by the other ſuture, with proper eaſy compreſs and bandage, as have already been deſcribed. *Berengarius*, *Wiſeman*, *Belloſte*, and other eminent practical writers, recommend this kind of treatment, which I have ſeen attended with ſucceſs in many inſtances; and in two, where large flaps, leaving the bone bare a great ſpace, grew to it again, by being clapped down, before the air had made impreſſion upon the parts, to prevent their reunion.

The *pericranium* being ſtrongly attached to the ſkull, by an infinite number of veſſels, when that membrane is taken away, by any external force, the bone muſt ſuffer in proportion to the violence of the cauſe producing that effect; and then the acceſs of the air may prove farther detrimental to it, againſt which it ſhould be defended as much as poſ-

ſible. The firſt apparent change of colour of the bone, under theſe circumſtances, is from a blueiſh white to a yellow, growing gradually darker, approaching to black. Nature will, ſooner or later, according to the depth that the ſubſtance of the bone is injured, ſeparate the dead parts from the living, by fleſh ſprouting from the ſubjacent veſſels; and once I had a very fair opportunity of diſcovering, even without the aſſiſtance of a glaſs, the vibrations of the new made arteries, upon the appearance of this kind of vegetation, coming through ſmall holes in the very thin ſcales of the ſkull, as they were caſting off, by that means. This operation of nature is called the exfoliation of the bone. After that impediment to healing is removed, the vaſcular compages or fleſh, proceeding from the extremities of the veſſel belonging to the bone, forms a net-work, which, covering the bone, and uniting with the fleſh generated by the neighbouring parts, ſupplies the loſs of ſubſtance. This doctrine is agreeable to the univerſal conſent of phyſiologiſts, and the moſt attentive ſurgeons.

Hence

Hence we ſee, that the denudation of the bone, under theſe circumſtances, protracts the cure of the wound; but in order to haſten it, and prevent ill accidents, from expoſing the *cranium* to the cold air, *Belloſte* propoſes dreſſing but ſeldom, after making many adjacent holes, with a drill or *perforator*, as far as the *meditullium*, whence fleſh, he ſays, will proceed and cover the bone, before the influence of the air can make exfoliation neceſſary to the cure; but from experience, I have found this method will not always ſucceed; the reaſons are obvious enough, when we conſider the veſſels of the bone may have received ſo much injury, by the fall or blow, as to deſtroy their vitality in ſuch a manner, that terebration cannot anſwer the propoſed end; and we may eaſily conceive, what muſt prove the conſequence of covering the bone over with fleſh in ſuch a ſtate.——Concerning this practice, we ſhall ſay ſomething more, under the article of contuſion of the ſkull.——Formerly, ſurgeons of the greateſt note, and among the reſt, *Wiſeman*, uſed to raſp or ſcrape the parts of the bone thus altered, and alſo in fiſ-

ſures.——I have twice ſucceeded, beyond my expectation, by ſcraping firſt, and then making many ſmall holes in the *cranium*, till the blood was ready to ſtart; and I have often greatly expedited the cure of ſome kinds of *caries* in the bones, in other parts, by the ſame management, having a variety of inſtruments, applicable to theſe purpoſes.*

We are to endeavour all we can to prevent any great flux of matter, avoid every thing that may corrupt the bone, as oleaginous applications, &c. Spirituous, warm, ſubtile medicines are to be uſed; we may recommend *tinct. myrrh. tinct. maſtich. ſpirit. terebinth.* &c. which preſerve the bone from corruption, and defend it againſt the influence of the air; the other parts of the wound may be dreſſed with dry lint, covered with a pledget of *unguent. e gum. elemi*, &c. care being taken to ſuppreſs a luxuriance of fleſh, as mentioned in the treatment of wounds in general.——Keeping the parts warm

* Vid. Comment. *Van Swiet.* in *Aphoriſm. Boerhavii*, § 254.

warm promotes the regeneration of fleſh, and conſequently the exfoliation of the bone. During the time of dreſſing, the ambient air may be warmed, if the ſeaſon of the year requires it, with a chafing-diſh of coals.—— Whether terebration, &c. are practiſed or not, this method of dreſſing is proper, and ſhould be performed as expeditiouſly as poſſible.——Fungous fleſh is apt to grow from the lips of the wound, and lie looſe upon the bone, without great care in the dreſſing to prevent it, and which neglected might create much trouble, both to the patient and ſurgeon, as I have ſeen more than once; and in one caſe that I was concerned in, about ſix months after the accident, the cure was obſtructed, through inattention in this reſpect, not a little to the prejudice of the ſurgeon's character.

OF THE VARIOUS INJURIES INCIDENT TO THE SKULL.

WE have now to conſider the different injuries the cranium may ſuffer; firſt giving a ſhort account of its bones, &c. It is a kind of box or caſe of a *ſpheroidal* figure, containing and defending the brain, with its appendages, againſt external injuries, formed of eight bones; which are the *frontal*, two *parietal*, two *temporal*, the *occipital*, the *ſphenoid* and *ethmoid*, connected by the *coronal*, *ſagittal*, *lambdoidal*, *ſquamous*, and *tranſverſe* ſutures; the *coronal* runs acroſs the ſkull, from the upper edges of the *ſphenoidal* bone, joining the *frontal* to the *parietal* bones: the *ſagittal* begins at the *frontal* bone, ends at the *occipital*, and joins the *parietal* bones; under which ſuture lies the longitudinal *ſinus*; and this ſuture is continued down to the noſe in children, dividing the *os frontis* in the middle. The *lambdoidal* ſuture connects the poſterior parts of the *parietal* bones to the *occipital* bone, and under this ſuture is the

the courſe of the lateral *ſinuſes*; and in this ſuture are found more of the *oſſa triquetra*, or *wormiana*, from *Wormius*, the diſcoverer of them, than in any other. The *ſquamous* ſutures are made by the ſuperior parts of the *temporal* and *ſphenoidal* bones, lapping over the lower parts of the *parietal*. The *tranſverſe* ſuture paſſes over the face, and runs through the bottoms of the orbits of the eyes, joining the lower edge of the *frontal*, to the *ſphenoidal* bone. The bones of the ſkull have two tables, ſeparated by a *meditullium*, but this *diploë* is often wanting, as well as the ſutures obliterated, in old ſubjects; there are alſo holes, convexities, projections, &c. to be remarked, by an examination of the ſkeleton, in order to prevent falling into miſtakes.

The beſt authors, ancient and modern, divide the injuries, of which the ſkull is ſuſceptible, into five kinds, as a *fiſſure*, a *fracture*, a *contuſion*, a *depreſſion*, and a *cut*; but before we treat of theſe injuries, it is proper to direct the methods neceſſary to be taken, in order to diſcover the nature of them, when they do not evidently appear,

after

after being aſſured, that the patient has received a hurt by a blow or fall upon his head, though we cannot preciſely determine the place, where the hurt is. The way to come at the knowledge of it is, as *Hippocrates* directs, *de capitis vulneribus*, by examining the nature of the weapon, with the manner that the patient received the ſtroke or fall, and the length of the wound is to be conſidered; for a very long wound cannot be inflicted upon the head, without manifeſt hazard of injuring the ſkull, as has been remarked, on account of its *ſpheroidal* figure; and we muſt alſo remember, the difference of thickneſs in the different parts of the ſkull, as well as their natural convexities and projections; but there is ſuch a variation in ſkulls, that with the utmoſt attention, we may ſometimes be deceived. In exploration with the probe, we muſt not forget the *ſinuoſities*, the *inequalities*, *ſutures*, &c. leſt the rough and unequal ſurface of the ſkull deceive and lead us into ſome ſuch error as that mentioned of *Hippocrates*.——This great man, and other eminent authors ſince his time, adviſe giving the patient ſome hard ſubſtance to chew, as a cruſt

a cruſt of bread; or to put a ſtring between his teeth, pulling it with a ſudden jerk, which, they ſay, will give a ſenſation of pain in the injured part of the ſkull; but theſe experiments are by no means to be depended on; they can have no effect, except in thoſe parts, where the *temporal* muſcle is attached, as *Berengarius* well obſerves; who alſo tells us, that ſome people, particularly *Lanfranc*, pretended to make the diſcovery, as is commonly done in earthen-ware, to find if it have a flaw, by ſtriking the ſkull with ſome ſmall ſolid body; but this experiment is equally fallacious and ridiculous as the other. Feeling with our fingers will ſometimes ſerve us, though not always; when therefore we are called to a patient, whoſe ſkull we have reaſon to fear, from the ſymptoms, has ſuffered an injury, if there are no viſible ſigns to direct us to any particular part, we are to examine ſtrictly, with our fingers, in every part, the head being firſt well ſhaved, in order to diſcover any inequalities, or yielding of the bone, or puffy ſoftneſs of the teguments, attended with ſome ſenſe of pain upon preſſure, which may guide us to the injured

injured part of the bone: and the patient, though he may not be perfect in his ſenſes, ſtill may give us ſome light into this obſcure matter, by clapping his hand to the part, where he feels pain.

When we have diſcovered a ſuſpicious part, with ſymptoms of a fracture or fiſſure, it ſhould be opened to the bone directly, in order to prevent the worſt of conſequences, of which we have innumerable inſtances, proceeding from delay; as we may find in *Schenkius*, and other obſervators, and ſome ſuch I have obſerved.

We ſhall here curſorily take notice of the different manners of opening the parts, as the means of inquiry, neceſſary in all the injuries happening to the ſkull; deferring the reſt till we come to particular caſes, becauſe all of them have ſomething peculiar to be attended to. Laying the bone bare, or ſcalping, is done by cutting the ſcalp with a ſtrong knife, appropriated to this uſe, and called a ſcalping-knife, lately much improved. Writers upon this ſubject have directed the inciſion to be made in different directions and figures; as the *rectilinear*, the *angular*,

angular, that in form of a T, and the *crucial*; the firſt is proper, when we want to purſue a fiſſure; the others are ſeldom found uſeful; for when we have in view the making room for the application of the *trepan*, or *trephine*, it is better to remove a circular or oval piece of the ſcalp. That great ſurgeon Monſ. *Arnaud*, ſays, he made the crucial inciſion, with ſucceſs, upon the *temporal* muſcle, contrary to the opinion of other ſurgeons; and I have twice ſucceſsfully removed a conſiderable portion of it, to make room for perforating the ſkull, without leaving any impediment in the action of that muſcle.—— In making the inciſion, care ſhould be taken to cut through the teguments and *pericranium* equally, and at once, uſing the edge of the knife more than the point, eſpecially if we have reaſon to think the *cranium* is much broken and yielding; becauſe if we plunged down the point, bearing hard upon it, we ſhould, by that incautious ſtep, be apt to depreſs the ſkull more, or perhaps injure the ſubjacent parts, by its ſlipping between the fragments. After having completed the inciſion in this manner, and raiſed the *peri-*

cranium

cranium a little from the bone, quite round, with the knife, the *ſcalprum* will be found the propereſt inſtrument to clear the bone, as we ſhall more particularly mention, when we come to deſcribe the application of the trepan.

OF FISSURES.

WE ſhall firſt take under conſideration the *counter-fiſſure*, with its ſeveral ſorts. 1. Where the blow is on one ſide of the head, and the ſkull cracked on the other. 2. Where the internal table is broke, the external remaining ſound. 3. Where the ſtroke is received on one bone, and the fiſſure in that adjoining.

A great many authors have doubted of the exiſtence of a *counter-fiſſure*; and indeed it is a difficult taſk to account ſatisfactorily for ſuch an effect, eſpecially in the two firſt kinds. It would be only waſting time, to dwell upon the vague opinions that have prevailed in different ages, concerning the violent agitation the animal ſpirits are put into from

from a conſiderable blow on the head, and the ſtrong impulſe they conſequently make againſt the *cranium*; or to conſider the compariſon that has been made between the ſkull and an empty bottle, which ſtruck on one ſide will ſometimes crack on the other; or to debate the queſtion about the ſubtile *aura*, ſaid, by curious, ſpeculative men, to be contained between the tables, that, upon a ſudden ſhock or blow, may expand, and break the internal table, and not the external; we ſhall therefore only produce ſuch teſtimonies of the facts, as to put the matter as much beyond controverſy, as the nature of the ſubject admits of, leaving the curious to reaſon upon this abſtruſe point as they pleaſe. We ſhall not implicitly rely upon the authority of *Hippocrates*, *Galen*, *Celſus*, and other fathers of our art, though they mention the fact, and merit a great degree of confidence, as they ſeldom aſſerted any thing without having it confirmed to them by ocular demonſtration; but we ſhall refer to thoſe authors only, who relate what they were eye-witneſſes of.——*Berengarius* ſays, he has ſeen three caſes, where the *fiſſures* were oppoſite

to

to the parts which received the blows.——*Nicolaus Florentinus* affirms his having ſeen a fracture, with a great collection of matter, on the contrary ſide to that which received the blow.——*Fallopius* ſays, that he has ſeen inſtances of this nature.——*Leſſius* relates an example in a perſon, who received a wound upon his forehead, by a fall from his horſe, and that after his death, a *fiſſure* was diſcovered in the *occipital* bone, with extravaſated blood under it, without the leaſt appearance of external injury on that part.——*Meek'ren* gives a ſingular inſtance of a perſon, who had only a contuſion on the ſide, where he was ſtruck, and two *fiſſures* on the oppoſite.——We might add the teſtimonies of *Paré*, *Tentanus*, *Dionis*, *Garengeot*, *Mery*, *Petit*, *Arnaud*, and *Peyronie*, upon this occaſion.

Tulpius mentions a very memorable example of a *fiſſure* in the internal table, cauſed by a ball, the external not being injured.——*Scultetus* relates two caſes, in which the internal table ſuffered, the external remaining unhurt.——*Paré* gives us the hiſtory of a nobleman's caſe, in which the internal table of the ſkull was fractured by a ball, though the

the head was well guarded with a helmet, and the external had ſuffered no manifeſt injury.——*Paaw* in his commentaries upon *Hippocrates*, *de Capitis Vulneribus*, aſſures us, he opened the head of a young man, who died three days after an accident, by a fall out of a cart, and found the external table ſound, with a ſeparation of a large portion of the internal.——*Petrus Spererius* ſays, that *Rinaldus Corteſius* had a ſkull in his ſtudy, in which the lower table was fractured, the upper remaining ſound.

Paaw, in the above recited place, relates the caſe of a perſon, who was ſtruck on the left *parietal* bone, near the *ſuture*, and, by that percuſſion, had the right fractured.——*Berengarius* mentions a ſimilar accident.——*Ruyſch* has obſerved the ſame in a very remarkable manner.

From theſe convincing authorities, which I think cannot leave the incredulous in doubt, it may reaſonably be concluded, not to mention any thing of my own remarks, that the various kinds of *counter-fiſſure* may happen, and the effect of a violent percuſſion be communicated from one part of the head

to another.——In all our inquiries and inveſtigations, it is eſſentially neceſſary, to keep our minds as free as poſſible from prejudices, and not implicitly yield our aſſent to the doctrine or opinion of others, unleſs ſupported by matter of fact, and rational experience, in order to acquire true practical knowledge.

Having conſidered the *counter-fiſſure*, we ſhall proceed directly to that kind, which more frequently occurs.* When the *fiſſure* is large, it is ſoon diſcovered, after the bone is laid ſufficiently bare, and the blood well ſponged up; but a *capillary fiſſure* requires great attention to diſcover it. The method propoſed by *Celſus* and others for this diſcovery, is to pour ink, or ſome other coloured liquor, upon the ſuſpected part of the bone, and then to wipe it dry with a ſponge; when ſome of it will have inſinuated itſelf into the crack, not to be expunged, or even obliterated by a little ſcraping of the bone; which indeed may ſerve to ſhow the *fiſſure* ſtill plainer.

In

* Vid. *Wagner de Contra-Fiſſura*, & *Le Maire de Reſonitu.*

In order to know whether the *fiſſure* penetrates both tables of the ſkull, *Berengarius* propoſes, in his treatiſe *de Fractura Cranii*, that the patient ſhould hold his breath, having his mouth and noſtrils cloſed, driving, as he expreſſes it, the air with the utmoſt force from his breaſt to his head, and ſays, that if the *fiſſure* penetrates both the tables, moiſture will appear through the crack; but this experiment is not to be depended upon, though ſo great an authority may be added, as that of *Fabricius ab Aquapendente*. *Guido*, &c. have propoſed other means, which are equally fallible.

Since *fiſſures* are ſo difficult to diſcover, and the paſſage is too narrow for the egreſs of extravaſated blood, &c. they frequently produce worſe effects than fractures; and in them, a concuſſion of the brain is more to be apprehended, than in large fractures, for obvious reaſons. Theſe conſiderations demand the moſt diligent and judicious inquiry at the very firſt, in order to obviate future evils. The inſtance which *Paaw* gives in his commentaries upon *Hippocrates de Capitis Vulneribus*, is very ſtriking, of a perſon,

who ten months after having received a *fiſſure*, which had paſſed unobſerved, was ſeized with a *vertigo*, and died in a ſhort time. In this caſe, after the patient's death, the bone was found carious, and the brain corrupted.

Hence appear the ſad conſequences of delaying to perforate the bone, by the trepan; and, as that operation is attended with little or no pain or danger, we ſhould not from the preſent abſence of threatening ſymptoms, by any means be deluded to procraſtinate, nor, I think, be induced by any authority to truſt to other methods, not even to *Belloſte's* favourite one of making terebrations to the *diploë* under a perſuaſion that the *fiſſure* penetrates no farther, a caſe which I believe rarely happens; but ſhould it not proceed through both tables of the ſkull, yet the *dura mater* may probably have ſuffered under that very part, laying the foundation of future miſchief: and in the caſe juſt mentioned early trepanning probably would have ſaved the patient. The happy event in ſome caſes without the operation, may have had too much

much weight with the timid and unexperienced.

A *fracture* is the ſecond kind of injury of the ſkull; the definition of which differs from that of a *fiſſure*, which is no more than a ſimple ſolution of continuity of the bone, whereas by a *fracture* is underſtood a ſeparation of one or more pieces from it. This accident requires immediate trepanning, as the fragments of the bone irritating and injuring the *dura mater*, may be ſoon productive of irreparable miſchief, as I have often obſerved; unleſs they can be removed by ſome other method without detriment to the ſubjacent parts.

A *fracture* of the ſkull is divided into three kinds. 1. That, in which one or more pieces are entirely ſeparated, and not much depreſſed. 2. That, where the fragment or fragments lie wholly or partly under the ſound bone, which is the worſt caſe that can happen, on account of the difficulty of extracting or elevating them. 3. Is when the piece rides upon the ſound part of the bone; which is a bad circumſtance, as its lower

part may ſink down, penetrating the meninges and brain itſelf.

The applications proper, after removing the fragments of the bone by trepanning, or otherwiſe, as the exigency of the caſe demands, are ſuch as the membranes, the bone, and the ſcalp require reſpectively, which will be ſpecified after the operation of trepanning.

The third kind of injury, which we have in order mentioned, is a *contuſion* of the ſkull. It may be occaſioned by a fall, by ſtriking the head againſt ſome ſolid body, by ſome heavy weight falling upon the head, or by a blow with an obtuſe weapon. By ſuch violence, the veſſels belonging to the bone may be injured, and the courſe of their fluids obſtructed, whence may ariſe worſe conſequences, than from *contuſions* of the ſoft parts; for if not diſcovered, and the bone laid bare in time, it may grow carious, and produce moſt dreadful ſymptoms.——*Schenkius* ſpeaks of a gentleman, who received a wound on his head by a bullet, which was ſoon healed, but after that he was afflicted with a perpetual

petual head-ach for many years; on which account, various methods were tried, but in vain; at length the *cicatrix* opened of its own accord, and the bone was found carious; upon the ſeparation of the affected from the ſound part, the patient perfectly recovered, without any pain of his head remaining.—— The ſame external injuries may extend their effects farther; the veſſels, connecting the *dura mater* to the *cranium*, may be ruptured, cauſing a ſeparation of theſe parts; whence extravaſations of blood, inflammation, ſuppuration, and ulceration upon that membrane, may enſue; under which circumſtances, nothing but trepanning can bring relief.*

* Doctor *Van Eems* in *Prælect. Academic. Leydens.* ſpeaking of the veſſels of the *dura mater* which attach it to the ſkull, ſays:

" Nunquam neglexi occaſionem hanc rem accuratius " inquirendi, & noſocomium publicum hanc opportuni- " tatem mihi dedit. Juvenis & robuſta puella moriebatur " vera phrenitide, ejuſque cadaver coram auditoribus, " paucis poſt mortem horis, aperui. Quando olla cranii " erat ablata a ſubjecta dura matre, in tota ejus ſuperficie, " qua cranium ſpectat, non inveni ullum punctum, mi- " croſcopio diſtinguendum, ubi non erat guttula ſan-

guinis

The fourth ſort of hurt the ſkull may receive, is a *depreſſion*, and from the ſame cauſe as a *contuſion*. Some ſurgeons deny the fact peremptorily, except in young ſubjects, in two of which I have ſeen it, in a very remarkable manner, but never in an adult, without a fracture; yet I can conceive ſome ſkulls may admit of it, and ſeveral authors of the beſt credit confirm it, as we may ſee in a collection of examples in *Stalpart Vander Wiel.*——*Hildanus* relates the caſe of a ſmart boy, who became ſtupid by ſuch an accident, gradually loſing his memory and intellectual faculties.

The patient is liable to all the ſymptoms under this accident that attend a *contuſion* of the ſkull; and worſe may more immediately enſue, by compreſſion, as the ſkull is completely filled with the *encephalon*.

The ancients recommended various methods of raiſing the depreſſed parts of the ſkull. The uſe of *cupping-glaſſes* has been adviſed

" guinis rubri, & cava olla cranii ablata, etiam non ex-
" hibebat ullum punctum, quod non oſtendebat talem
" guttulam ſanguinis reſpondentem guttulæ, in ſuperficie
" duræ matris viſibili."

adviſed by ſome, and among them, the great practitioner *Hildanus:* others, have directed the application of an adheſive plaſter, having a ſtring affixed to it, to pull it up with; but theſe methods are inſignificant. It is much more probable, that forcibly pulling up the ſcalp ſhould ſeparate it from the *pericranium*, than raiſe the depreſſion of the bone. *Paaw's* method is too irrational, to take any particular notice of it, and that, recommended by ſome writers, with a ſcrew fixed into the depreſſed part of the ſkull, in order to elevate it, is liable to many objections, that can want no explanation. It is very aſtoniſhing, that ſuch great maſters ſhould fall into ſuch groſs abſurdities; but, according to *Scultetus* and others, it is better to leave the work to nature, than practiſe any of theſe methods, which are exploded by the moderns: but when the functions of the brain are hurt, by a depreſſion of the ſkull in children or adults, trepanning is adviſable, making as many perforations as ſhall be found neceſſary, to give an opportunity of purſuing ſuch other meaſures, as the urgency and circumſtances

of

of the caſe may require, as will be hereafter directed in the article of trepanning.

The fifth kind of injury, that the ſkull may ſuffer, is a *cut*; which may properly be divided into three ſorts. 1. The perpendicular. 2. The oblique. 3. Exciſion, or that which carries off a piece of the bone with the teguments.——The perpendicular *cut* differs but little from a *fiſſure*; it is eaſier diſcovered, and not attended with ſuch contuſion of the teguments and bone; conſequently is generally leſs dangerous.——The oblique is worſe than the perpendicular, as blood or matter may be apt to lodge under the ſloping wound; but on the other hand, there is leſs hazard of having the *encephalon* wounded.——Exciſion, if it penetrates no farther than the *diploë*, is rather leſs dangerous than either of the other, and it is to be treated as a wound with loſs of ſubſtance. Where the ſcalp is not totally ſeparated, having the piece of the bone adhering to it, ſome ſurgeons have propoſed and adviſed diſſecting that off, clapping down the ſcalp over the ſound part of the bone, and keeping

ing them in compact by eaſy compreſs and bandage.——*Stalpart Vander Wiel* has collected precedents from writers of good credit, to encourage the practice; and mentions ſome, even where both tables of the ſkull have been hewed off, that have ended happily by this treatment, without any exfoliation.——*Berengarius* relates the caſe of a gentleman, who was wounded in the forehead, ſo that the ſcalp, with a piece of the bone affixed to it, hung down over his eye; this experienced ſurgeon ſeparated the piece of bone from the ſcalp, proceeded as we have mentioned, and cured his patient in a ſhort time.*——*Fallopius* gives a ſimilar caſe.

* *Job a Meck'ren* has introduced, among his chirurgical operations, a ſtrange ſtory of a *Ruſſian* nobleman, who had ſuch a defect ſupplied, by a ſurgeon, from a dog's head; but the bigotted divines of that country excommunicated him, and would not annul the ſentence, till he ſubmitted to have the brutal part of him removed.

There is, I think, in the *Philoſ. Tranſ.* an account of a ſingular operation performed by a ſurgeon, who after diſſecting off a cock's ſpur, with as much fleſh upon it as he could, ingrafted it into an inciſion made upon his comb on the top of his head, where it firmly grew.

caſe.——*Petrus e Largelata* aſſures us, he has taken ſuch meaſures with ſucceſs.——*Paré* ſpeaks of an extraordinary caſe of this kind, ſucceſsfully treated by him in the ſame manner.——*Belloſte* in his Hoſpital Surgeon, has a moſt dreadful caſe, which terminated very happily, of a girl between eleven and twelve years old, who had received eighteen or nineteen wounds upon her head with a cutlaſs, comprehending every ſpecies of wound here mentioned.

All theſe wounds require the ſame treatment, we have already directed; but it certainly would be in vain to attempt the method of cure, which has been recommended to the conſideration of ſurgeons in the third ſpecies, or *exciſion*, except in recent caſes.*

A SHORT

* Profeſſor *Monro* ſpeaks of a perſon, who in an engagement with a privateer, received a wound upon the middle of the *os frontis*; which, though it was ſoon healed apparently, yet left a continual pain of the part. Some time after his return home the wound broke open, upon which incident the pain abated, but a deep and extenſive *caries* was found in the bone by the profeſſor, to whom he applied after having been under the care of other ſurgeons to no purpoſe. The carious bone was

A SHORT DESCRIPTION OF THE MATERIAL PARTS OF THE ENCEPHALON.

THERE is an intercourſe between the *pericranium*, *meditullium*, and *dura mater*. The *dura mater* is an inelaſtic membrane, about the thickneſs of parchment, lining the internal ſurface of the ſkull, as the *pericranium* encompaſſes the external, to which it is attached by a greater number of veſſels, and more ſtrongly in children than in adults, giving a covering to every nerve in its paſſage out of the ſkull. The *falci-form* proceſs of

was not black, but of an aſh-colour, and full of ſmall, like worm-eaten, holes, and the diſcharge was large, ichorous, and very fœtid. This practitioner of great diſcernment, was apprehenſive that the *caries* penetrated, at leaſt as far as the *diploë*, if not quite through the bone. From this conſideration he reſolved to apply the trepan, and make ſuch a number of perforations as were neceſſary to encompaſs the carious part of the bone, and found it affected to the *diplöe*, about the breadth of the palm of his hand, which he eaſily raiſed from thence, except in one ſmall ſpace where he left it to exfoliate; and cured his patient, after this operation, by the common treatment.

of the *dura mater*, running according to the courſe of the *ſagittal* ſuture, and longitudinal *ſinus*, divides the brain into the two hemiſpheres; and the tranſverſe proceſs is in the courſe of the *lambdoidal* ſuture and lateral *ſinuſes*, ſeparating the *cerebrum* from the *cerebellum*; which proceſſes, forming a kind of triangle, ſerve to prevent a vacillation of the brain, being aſſiſted by the entrance of the veſſels of the *dura mater* into the ſkull, as deſcribed. ——The *pia mater* is one of the moſt delicate vaſcular membranes, immediately inveſting the brain, in all its convolutions or plicatures; it is ſo fine and tranſparent, that the brain appears clearly through it; its external ſurface is connected to the *dura mater* by veins, opening into the *ſinuſes*; its internal is attached to the brain by *capillary* veſſels, called *vaſa tomentoſa*.——The brain is compoſed of a cortical, and medullary part; the firſt is of a browniſh, or rather cineritious colour; the other white, and of a firmer texture; both ſubſtances are vaſcular, but the cortical more ſo than the medullary, from whence the nerves proceed.——The *cerebellum* lies below the poſterior lobes of the *cerebrum*;

cerebrum; it has no convolutions, like the brain, but it has curved parallel lines, deſcribed upon its ſurface by the *pia mater*, and s of a darker colour than the *cerebrum.*—— Under the *cerebellum* lies the *medulla oblongata*, improperly ſo called, for it is rather of a depreſſed pyriform figure. This part is formed by the union of the *medullary* ſubſtance of the *cerebrum* and *cerebellum*; whence proceeds the *medulla ſpinalis*, which is alſo to be conſidered as a continuation of the brain, with its thirty pair of nerves divaricating from it: and from this connexion of the nervous ſyſtem, we may account for many appearances, though not in ſo ſatisfactory a manner as we wiſh.*

OF

* Read the late profeſſor *Whytt's* excellent book concerning the ſympathy of the nerves and nervous diſorders: and what doctor *Hales* has ſaid in his Statical Eſſays, vol. 2. pag. 59 and 60: which kind of nervous ſympathy I have lately experienced, in an illneſs, to a great degree. ——Alſo read my ingenious friend doctor *Kirkland's* Diſſertations concerning the Brain and Nerves, and the Sympathy of the Nerves and Irritability.

OF THE INJURIES WHICH THE ENCEPHALON, OR PARTS CONTAINED WITHIN THE SKULL, MAY SUFFER.

THE *encephalon* may ſuffer. 1. By concuſſion. 2. By compreſſion. 3. By irritation. 4. By being wounded with cutting inſtruments, or fragments of bones. 5. By ruptures of veins, arteries, or lymphatics, proceeding from concuſſion, or ſome other cauſe, and occaſioning extravaſations upon the meninges of the brain. The coats of the veſſels, which are ramefied in, and upon the plicatures of the *pia mater*, connecting it to the *dura mater*, are very weak and tender; conſequently eaſily ruptured by concuſſion. 6. By inflammation; whence may proceed abſceſſes, or collections of matter. Though pure blood extravaſated, never changes into purulent matter, yet it is apt, after coagulation, to be rendered fluid by inteſtine motion and putrefaction; becoming then ſo acrimonious and ſtimulating, as to produce in the parts, where it is lodged, an inflammation; in

in conſequence of which, *pus* may be formed and mixed with it, which appearance, probably, has deceived inattentive ſurgeons into an opinion, that blood is tranſmutable into *pus*. 7. By a detachment of the *dura mater*; whence may proceed extravaſation, inflammation, and an ulcerous foulneſs, or ſloughing of that membrane, proving of the moſt dangerous conſequence, as we have remarked under the article of contuſion of the ſkull.*

This variety of cauſes will be productive of a great variety of ſymptoms or effects, ſooner or later; as bleeding at the noſe and ears, head-ach, reſtleſſneſs, inflammation of the eyes, fevers, vertigo, ſtupor, loſs of ſenſes, as ſeeing, hearing, &c. deprivation of ſpeech, and voluntary motion, difficulty of reſpiration, coma, palſy, involuntary emiſſion of fæces and urine, apoplexy, and convulſions; and then death ſoon cloſes the diſmal ſcene, unleſs nature can be aſſiſted by art.

* See Mr. *Pott's* judicious Practical Treatiſe on this ſubject.

Some of theſe ſymptoms attend every injury done to the *encephalon*, ſooner or later, more or leſs, according to the degree of obſtruction to the circulation, inflammation, oppreſſion of the brain, &c.——Pain and heat of the head, with redneſs and wildneſs of the eyes and looks, attended with fever and a tenſe pulſe, denote an inflammation upon ſome part of the *encephalon*, which frequently in a ſhort time terminates in delirium or phrenſy: and when matter is forming, in conſequence of inflammation, the patient is commonly ſubject to rigors.—— When the brain is oppreſſed by extravaſation or otherwiſe, the nerves are affected, the pulſe generally becomes depreſſed and irregular, and other ſymptoms ſupervene, to a degree in proportion to that oppreſſion, &c.

From theſe conſiderations we muſt infer, that the aſſemblage of ſymptoms will generally be of a mixt nature; and the ſurgeon muſt pay the utmoſt attention to them, to avoid falling into error of judgment, in declaring his ſentiments in ſuch a doubtful matter, which will not admit of a preciſe determination.

How

How far a concuſſion of the brain, affecting the origin of the nerves, without any other evident cauſe, may excite diſorders in the nervous ſyſtem, &c. is too abſtruſe a point for us to attempt to elucidate.*—— A concuſſion of the brain may happen, without the head being the part immediately ſhocked; of which we have inſtances; and the like I once ſaw. We have alſo the fatal effects of concuſſions demonſtrated to us by diſſections, where only the blood-veſſels have been found turgid, without any rupture of them. A very remarkable caſe of this kind I had an opportunity of obſerving, ſome years ago, by opening the head of a boy, who had received a fall a week before, and who from the time of the accident, till the day before his death, was almoſt inceſſantly ſinging. Upon the ſtricteſt examination, I could diſcover no extravaſation or ruptured veſſels, but thoſe diſtributed in the folds of the *pia mater* appeared very turgid. When this fatal accident happened, the boy was

 learning

* Vid. *Bohnium* in *Renunciatione Vulnerum, de Vibratione Cerebri* pag. 172: *Et Berengarium de Commotione Cerebri.*

learning pſalmody; and it was obſerved by thoſe who attended him on this occaſion, that his voice was more melodious after than before it, and that he ſung the tunes as truly. The day before he died he grew comatoſe, and expired in ſtrong convulſions upon the ſeventh day after the accident.

Hippocrates, and other ancient writers, as well as the moderns, have obſerved, that when a paralytic diſorder ſeized a perſon, in conſequence of an injury done to the brain, it was generally on the oppoſite ſide to that which received the blow. It has alſo been obſerved, that ſometimes the other ſide has been convulſed at the ſame time; as indeed I lately ſaw, in a very ſingular caſe, where the breech-pin of a gun, near three inches long, was lodged out of ſight in the left hemiſphere of the brain.*——*Bonetus*, *Hildanus*, *Valſalva*, and others, mention caſes in which extravaſations were found, upon opening the heads of patients, who had paralytic ſymptoms of their limbs on the oppoſite

* See this caſe in the ſecond volume.

poſite ſides. The moſt eminent writers and accurate obſervers agree, that it more frequently happens thus; were it invariably ſo, the remark would, on ſome occaſions, be a conſiderable direction to our judgment and practice.——Some ſpeculative men have attempted to account for this appearance, by admitting a decuſſation of the nerves,* and aſſigned reaſons for the injured ſide being thrown into convulſions at the ſame time: but let us leave theſe controverted, knotty points, to be diſcuſſed by the curious inveſtigators.†

* *Caſſius*, a man of great note, one of *Aſclepiades's* pupils, and his ſucceſſor at *Rome*, was of this opinion; but modern anatomiſts do not allow a decuſſation of the nerves.

† *Valſalva* and *Morgagni* ſay, that in diſſection of bodies dying of hemiplegias, they found the brain affected on the oppoſite ſide.—Vid. *Adverſar. anat. Morgagni* 6 & *Animadvers.* 84.——A man, aged twenty-five, was ſeized with a fever, attended with a violent pain on the left ſide of his head, and not relieved by any means. He was not ſenſible of ever having received any external injury; but after about two months continuance, a tumour appeared upon that part, and he fell down in an apoplectic fit, the oppoſite ſide becoming paralytic, with total loſs of ſpeech

As the parts within the ſkull affected with inflammation, extravaſation, &c. or where there is a *fiſſure* without appearance of external injury upon the ſcalp, are ſo difficult to diſcover, we muſt, under ſuch perplexity, deliberately conſider the ſymptoms, and how the accident happened, with every circumſtance, that can poſſibly throw any light upon a matter of the utmoſt importance for the preſervation of the patient's life. Sometimes, though the patient's ſenſes are much impaired, as we have mentioned, he lifts his hand to the part affected; at other times, they are entirely taken away and we are deprived of that aſſiſtance to direct our judgment. Here we want the greateſt ſagacity; for not being able to find out preciſely the ſituation of the diſorder, it generally proves mortal.

Hippocrates relates an extraordinary caſe to this purpoſe, of a girl, who, by one of her play-

ſpeech for ſome days. Soon after his death I was preſent at opening his head, and we found a great quantity of fetid matter diffuſed about the plicatures of the brain, &c. and probably the apoplectic fit happened when the abſceſs burſt.

play-fellows, was ſtruck with the hand upon the *ſinciput*, and became immediately blind; ſoon after, ſhe was ſeized with a violent fever, accompanied with a pain of her head, and an inflammation of her face and eyes; on the ſeventh day, a conſiderable quantity of a bloody fluid iſſued from one of her ears; on the eighth, ſhe grew lethargic, and died on the ninth.——*Hildanus* has a caſe ſomething like this.——*Heurnius*, in his Commentaries upon *Hippocrates*, ſays, he has known ſome perſons loſe their taſte and ſmelling all their lives, in conſequence of falling upon the *occiput*: and there are many inſtances upon record, well authenticated, where the ſpeech has been affected for a long time by concuſſions of the brain.——*Valleriola* tells us of a boy, who was ſtruck on the head with a ſmall ſtick, without any ſymptoms of fracture or *fiſſure* immediately enſuing, or any appearance of contuſion upon the ſcalp; but on the ſixth day it inflamed, and then the patient was attacked with a palſy and convulſions, becoming delirious ſoon after, and died on the eleventh day.—— The ſame author mentions the caſe of a

vintner, who was ſtruck with a ſtone on his head, without apparently injuring the ſkull, yet on the fourteenth day he died: and upon opening his head, an extravaſation of blood was found upon the *dura mater*.——* *Bohnius* and † *Bonetus* have many ſuch ſingular caſes. ——The great profeſſor *Monro* inſtances the caſe of a painter at *Edinburgh*, who received a blow with a ſtone on the back part of his head, making a ſmall wound in the ſcalp. He refuſed to be let blood immediately after the accident, and walked near a mile to town; was then blooded freely, and properly treated in all reſpects; yet, within a few days, he was ſeized with a lethargy, and other uſual ſymptoms of an oppreſſed brain, and expired ſoon after. Upon opening his ſkull, neither fracture nor fiſſure appeared; nothing more was viſible, than a ſmall extravaſation of blood, with a turgeſcence of the veſſels.

Hence we ſee, that in conſequence of ſeemingly ſlight cauſes, the *encephalon* may ſuffer

* *De capitis vulneribus lethalibus in renunciatione vulnerum.*

† *In Anatomia Practica.*

ſuffer to a fatal degree: and under the circumſtances we have been relating, the intentions are, to cure the inflammation, remove the compreſſive cauſe, whatever it is, &c. On account of the inflammation, attending a fracture or fiſſure of the ſkull, &c. we muſt pay a due regard to the antiphlogiſtic method, veneſection in particular, and prevent, all we poſſibly can, the falling of blood upon the *dura mater*, &c. and if that has already happened, we muſt then endeavour to evacuate it ſpeedily; for by its ſtagnation, it ſoon becomes putrid and acrid, corroding the membranes, &c. the diſmal conſequences of which, we may read in *Schenkius*, *Tulpius*, *Wiſeman*, *Meek'ren*, *Vander Wiel*, *Hildanus*, and other obſervators, and in the *Acta Eruditorum Lipſiæ*.

When a piece of the ſkull is depreſſed, and happens to be ſlipped, and immoveably fixed under the ſound part of the bone, we muſt apply the trepan; making ſuch a number of perforations, as we find neceſſary to diſengage, and extract it with eaſe. Sometimes the internal ſurface of the depreſſed fragment, or fragments of the ſkull may be

be a great deal broader than the external, by breaking off from the internal table, the external oppoſite thereto remaining unhurt; in which caſes, many perforations may be found requiſite, for the eaſy and ſafe extraction of the depreſſed piece or pieces. Within three or four years, I have been concerned in three caſes, in each of which we made four perforations; in two of them we extracted five pieces, and in the other four, with great eaſe; the extraction of which would have been impracticable by any other means, on account of their internal ſurfaces being much greater than their external. We made the perforation in a line, in the moſt depending parts, a circumſtance that ſhould always be particularly attended to, for the free and uninterrupted diſcharge of the matter.*

When the ſymptoms are threatening, and we have no viſible marks to direct us, to the affected part of the interiors of the head, all we can do, is to have recourſe to plentiful veneſection, repeating it according to the patient's

* See two caſes, and pl. 2. in Vol. II.

patient's ſtrength and conſtitution, and uſe lenient purgatives and diluents freely, obſerving a very ſtrict regimen, and embrocating the whole head, after being cloſe ſhaved, with *ol. roſar. & acet.* Bleeding is to be particularly inſiſted upon; for by diminiſhing the quantity of blood, its impetus will be abated, the veſſels conſequently leſs diſtended, and thoſe ruptured will be more readily united, preventing the danger of more blood being poured out. This evacuation will greatly contribute to the removal of obſtructions in the ſmall veſſels, by making the circulation freer, and of courſe promote abſorption of the extravaſated fluids. We have from *Wiſeman* a ſingular inſtance of the good effect of bleeding, in the caſe of a gentleman, who was thrown off his horſe; upon which accident, ſeveral of the ſymptoms, attending a concuſſion of the brain, &c. ſupervened, but were removed by plentiful and repeated bleeding; and indeed much more plentiful at laſt, than was intended, by an odd accident, upon opening the *jugular* vein, which had been opened ſeveral times before. This caſe is the moſt worthy attention, for our encou-

ragement

ragement in this practice, and ſhould be read at large. See book 5. chap. ix. obſervat. x. of his excellent works.——*Paré* mentions a very pertinent caſe on this occaſion.—— I was conſulted a few years ago, for a clergyman, of a robuſt and ſanguine habit, who, by a fall from his horſe, had received a *fiſſure* upon the *occipital* bone, which was attended with moſt threatening ſymptoms. In repeated conſultations of a phyſician and ſeveral ſurgeons, trepanning could not be unanimouſly agreed upon till the eleventh day after the accident, for want of well authenticated precedents to encourage the practice upon that part: however, in this time, at leaſt a hundred ounces of blood were taken away; which evacuation, I believe, proved the means of preſerving his life. The appearances upon performing the operation, which I had urged in the ſtrongeſt terms at every meeting, demonſtrated the abſolute neceſſity of it, the *dura mater* being inflamed, and having a fetid, bloody *ichor* upon it.—— In attending a gentleman ſince, of a ſtrong conſtitution, with an uncommon *fiſſure* on the *os temporale*, I had alſo the opportunity of obſerving

obſerving the happy effect of copious bleeding, even after trepanning, violent ſyſtems ſtill continuing. In the firſt eight days, whilſt he lay conſtantly either in a *ſtupor* or a *delirium*, more than a hundred ounces of blood were taken away, by the concurrent opinion of two eminent phyſicians; and in the whole, during the cure, above double that quantity, nothing giving relief, on account of delirious ſymptoms, which returned at times to a great degree, but this evacuation. The blood had the thickeſt and toughеſt buff-coloured ſize we ever ſaw. In a reaſonable time he recovered as good a ſtate of health as he had before the accident, with the perfect enjoyment of his mental faculties.——Both theſe caſes are related fully in the ſecond volume of this work.

Purging

* I have ſeen ſingularly good effects from opening the *temporal* artery in concuſſions of the brain, &c, as well as in other diſorders of the head, not proceeding from external injuries; and I ſcarce remember an inſtance where it has been opened, on ſuch occaſions, without giving relief, more or leſs. About three years ago I opened it, with the approbation of a phyſician, for a perſon apparently in *extremis*, under a fit of the *apoplexy*; whilſt he was

Purging is recommended by all writers, ancient and modern, on theſe occaſions; but it muſt be by medicines of the gentleſt and leaſt ſtimulating kind, and by no means ſuch as heat the blood and increaſe its velocity, which would conſequently add to the inflammation, &c. This evacuation is of great conſequence to be attended to, on many accounts, and may aſſiſt in preventing an *abſceſs* of the liver, &c. that has frequently been taken notice of by obſervators, when treating of the injuries now under conſideration, by which the patient may loſe his life even though the diſorder in his head ſhould be

was bleeding he was evidently relieved, and it appeared to us that his life was owing to this ſeaſonable operation.——A great many years ago, I opened it, in the preſence of Sir *Benjamin Wrench*, then a phyſician of great character in *Norwich*, on account of an obſtinate *vertigo*, which had long reſiſted his preſcriptions; and during the bleeding, the complaint left the patient, returning no more; at which happy event the good old knight, my ſingular friend, whoſe memory I revere, expreſſed great aſtoniſhment.——See what *Marcus Aurelius Severinus*, the great *Neapolitan* ſurgeon, ſays upon *Arteriotomy*.——When doctor *Butter* took his degree a few years ago at *Edinburgh*, *Arteriotomy* was the ſubject of his *Theſis Inauguralis*.

be cured, as is exemplified by *Job a Meek'ren*, in his letter to *Barbette*, chap. ii. of his Medico-Chirurgical Obſervations.——Monſ. *Bertrandi* has a diſſertation on this ſubject, to which are ſubjoined obſervations in ſupport of it, by Monſ. *Andouille*, in the third vol. of the *Mem. de l'Acad. Roy. de Chirurgie.*——*Pouteau*, in his *Melanges de Chirurgie*, particularly mentions it, and alſo attempts to give a rational ſolution, how it proceeds from injuries of the head.——*Paré* and others have obſerved *abſceſſes* upon other of the *abdominal viſcera*, proceeding from the ſame cauſes.

Beſides *veneſection*, and gentle purging, occaſionally, in order to obviate bad conſequences, or remove them, the patient's diet ſhould be ſtrictly regarded, which ſhould conſiſt prinipally of the farinaceous kind; his drinks ſhould be of a reſolving nature, taken warm and very liberally, that moiſture, by the exhaling veſſels, may be conveyed to the extravaſated fluids, ſufficient to preſerve or bring them into a ſtate of fluidity, fit for abſorption by the bibulous veſſels: and medicines of the nitrous, attenuating kind, ſhould be joined with theſe diluting liquors, as the viſcidity

viſcidity of the blood and febrile ſymptoms ſhall indicate.——When the head is intenſely hot and painful, *ol. roſar.* or *olivar.* mixed with vinegar, makes a good topical remedy; and *ſal ammon. crud.* diſſolved in the vinegar may add to its efficacy; but we muſt not forget to have the head ſhaved cloſe all over, before the uſe of any embrocations. Under theſe circumſtances, ſpirituous applications are very improper.*

Celſus, *Berengarius &c.* adviſe lenient applications to be made to the ears, when a diſcharge is obſerved to proceed from them, in order to aſſiſt nature's effort, which ſhe ſometimes makes to the patient's great relief or entire cure.——*Stalpart Vander Wiel* tells us of a woman at the *Hague*, who, by a ſtroke with a round ſtick upon one of the *parietal* bones, had, ſoon after the accident, ſymptoms denoting an injury of the *encephalon*, and was cured by an evacuation of a ſerous, bloody

* An experienced ſurgeon of great judgment, aſſured me he once ſaw dreadful effects, from the uſe of ſtrong ſpirituous fomentations and embrocations, in a contuſion upon the head; which alarming ſymptoms vaniſhed by different treatment.

bloody fluid from her ear. This caſe, he ſays, he ſaw himſelf; and relates a ſimilar one, from *Langelottus*, which is alſo inſerted in the *Miſcellanea Curioſa German.*——I obſerved the ſame, ſome years ago, after a violent concuſſion of the brain, in a boy about twelve years of age, who recovered; and probably this diſcharge from his ear might ſave his life.

Should not the means we have been mentioning ſucceed, in the removal of the ſymptoms, as ſoon as we can diſcover any appearance, to direct us to the part affected, though only with a ſtrong probability, it is rational, and certainly juſtifiable practice, to proceed forthwith to manual operation; conſidering, as we have ſaid, that the operation of trepanning is not in its nature dangerous, and delay may prove of fatal conſequence, as *Hildanus* informs us happened to a young gentleman, who was committed to the care of an ignorant ſurgeon, that would not have recourſe to the trepan, though plainly enough indicated; and the patient died a few days after.——*Scultetus* gives an example of a perſon, who loſt his life by a neglect of this

operation. The clergyman before-mentioned muſt inevitably have periſhed, had it not been performed; in whoſe caſe the propriety of it was evidently conſiſtent with the principles of ſurgery, though the *fiſſure* was upon the *occipital* bone, yet that circumſtance occaſioned the demurs in the ſeveral conſultations; and indeed the operation has been rather too much diſcouraged, upon that part, by men of the moſt reſpectable characters, whoſe weight and authority make it very neceſſary for them, to be exceedingly cautious of what they publiſh, as it will be an example to regulate and determine the conduct of others, who may not have confidence in themſelves, for want of experience.

When a *fiſſure* and *concuſſion* are complicated, it ſometimes happens, that the ſymptoms, properly belonging to the latter immediately upon the accident, remit ſo much upon bleeding, ſcalping, &c. as to delude the ſurgeon into hope and belief, that he may ſucceed without trepanning; yet, notwithſtanding appearances become more favourable, in conſequence of ſuch meaſures having been taken, the moſt direful ſymptoms may come

come on unexpectedly, many days or weeks after, from extravaſation, inflammation, &c. upon the *encephalon*, of which we have innumerable inſtances; ſome I have ſeen; two indeed of a very ſingular nature, where the remiſſion of the ſymptoms was offered, as a reaſon for procraſtinating the operation, till the *dura mater* was much inflamed under the *fiſſures*, to the great hazard of the patients; and this is a point that demands the utmoſt regard.——Theſe conſiderations ſhould make us circumſpect in our *prognoſtics*, and very attentive in our practice, in order to prevent fatal conſequences. The moſt accurate and judicious obſervers have conſidered the ſymptoms, that ſupervene ſome time after the accident, as more threatening than thoſe which happen immediately, and the reaſons are too obvious to want illuſtration.

OF WOUNDS OF THE BRAIN.

BEFORE deſcribing the operation of the trepan, we ſhall give a ſhort account of wounds of the brain. Theſe wounds, made by cutting or other inſtruments, depreſſed fragments of the ſkull, &c. have always been claſſed with thoſe of a mortal nature: but the many authentic hiſtories we have upon record, of wounds of this part having been cured, ſhould teach and encourage us, never to leave our patients in ſuch deplorable circumſtances, without exerciſing our art and ſkill to the utmoſt of our power; giving them comfortable hopes of cure, and concealing the dangerous truth from them, but making, at the ſame time, a proper *prognoſtic* to the relations, friends, and by-ſtanders, in order to ſecure our reputations againſt cenſure and ill interpretations; as there generally are people ready enough to give their opinions without authority or reaſon.

Theſe wounds are attended with ſuch ſymptoms as we have enumerated in injuries done

done to the *encephalon*. The ſame applications are proper for them, as for wounds of the membranous parts, as *ung. e gum. elemi*, natural *balſams*, &c. as have been ſpecified, avoiding all oleaginous things. The medical and dietetic rules, &c. may be collected from what has been already ſaid.

HISTORIES OF CURES OF WOUNDS OF THE BRAIN, EXTRACTED FROM GOOD AUTHORITIES.

GALEN mentions a caſe that ſucceeded, in a youth at *Smyrna*, wherein the anterior ventricles of the brain were opened.—— *Nicolaus Maſſa* ſpeaks of the happy event of a wound, that penetrated as far as the *ſphenoidal* bone, as appeared by the introduction of the probe.——*Amatus Luſitanus* has a remarkable hiſtory of a man, who in fighting a duel, near the city of *Rome*, received a thruſt with a ſword through the forehead into the brain, and was cured in fifty days, contrary to the preſage, and to the great aſtoniſhment of the ſurgeons, who had the care

of him.——*Hildanus* relates the caſe of *Horſtman's* ſiſter, who was cured by him of a wound in her brain, cauſed by ſome depreſſed fragments of one of the *parietal* bones; and mentions his maſter *Slotanus's* viſiting the patient with him. He alſo ſpeaks of a ſimilar caſe, that ended happily, where another ſurgeon had prognoſticated a fatal event. ——*Glandorpius* gives the hiſtory of a robuſt man, who received a fracture upon his ſkull, out of which was taken, by his father *Ludovicus Glandorpius*, a large portion of the brain, after extracting ſome fragments of bone. In this caſe, though the wound was cured, yet the patient remained paralytic on the oppoſite ſide, and could never bear the noiſe of drums, trumpets, or guns.—— *Nicolaus* ſpeaks of a man, that received a wound upon the *vertex* into the ſubſtance of the brain, who, the day after the accident, became paralytic, vomited, and had the common ſymptoms attending it. He ate nothing during ſix days, and drank nothing but cold water ſweetened with ſyrup of roſes; after which his appetite returned, and he recovered to admiration.——*Jacobus Berengarius Carpenſis*

Carpenſis ſays, he has been an eye-witneſs to the recovery of ſix perſons, from wounds of the brain; though two of them became paralytic on one ſide, but he does not mention on which.——*Braſſavolus* aſſerts, he has ſeen wounds of the brain cured; in one perſon, he ſays, as much of the brain was evacuated, as would fill a hen's egg-ſhell; but though the wound was cured, the patient had ever after a great impediment in his ſpeech, and at length grew ſtupid. The ſame author mentions another patient, with an extenſive fracture of the ſkull, and loſs of a great quantity of the brain, whoſe life was ſaved, but he was deprived of ſpeech and underſtanding.——*Horatius Augenius* relates a very ſingular caſe of a wound of the brain cured. ——*Franciſcus Arcæus* gives us the narrative of a workman, employed in building a tower at *Valverda*, who, by a ſtone of twenty-four pounds weight, falling from a great height upon his head, had his ſkull fractured, with fragments driven into his brain. For the ſpace of three days he lay ſpeechleſs, and almoſt lifeleſs; after the eighth day, his head opened ſpontaneouſly, from the *ſinciput* to

the *occiput*, in the courſe of the *ſagittal* ſuture, and diſcovered collections of matter; ſoon after, his ſpeech returned, though imperfectly, and his eyes, which had been quite cloſed, opened; about twenty days after, he began to diſtinguiſh objects, and recover his intellectual faculties, and in four months, he was perfectually recovered.——Mr. *Younge*, a ſurgeon of eminence, who lived at *Plymouth*, recites many more ſucceſsful caſes, from the beſt authors, which may encourage us not to deſpair, in his treatiſe upon this ſubject, that he was compelled to publiſh, in the year 1682, in defence of himſelf, by the diſingenuous and illiberal treatment he met with from a phyſician, who would not admit that wounds of the brain could ever be cured; but obſtinately diſputed a well atteſted fact in a patient of his, whom he had cured of ſuch an accident.*

* The caſe of Mr. *Laudir*, a celebrated operator in ſurgery at *Edinburgh*, who ſome years ago received a fatal fracture upon his ſkull by a fall from his horſe, was very ſurpriſing to all the ſurgeons concerned. In the *meatus auditorius externus* was found a ſmall portion of the brain, from whence alſo at firſt proceeded a great effuſion

effuſion of blood. The *os occipitis* was ſeparated from its connection with the *parietal* and *temporal* bones on that ſide. A probe paſſed very eaſily through the *meatus auditorius* to the brain; and upon opening the head after death, a fracture was diſcovered, which extended into the *foramen magnum*——*Home* has a pertinent caſe in his Medical Facts and Experiments.

See *Remarques ſur les playes du cerveau en Mem. de l'Acad. Roy. de Chirurgie*, tom. 1. *par Monſ. Queſnay.*—— In this Mem. he takes occaſion to recommend the application of the trepan to the *frontal ſinuſes*, which I have alſo practiſed without inconvenience.——Diſorders may attack theſe *ſinuſes* requiring the uſe of the trepan, that cannot be remedied by any other means; as a collection of matter in conſequence of inflammation upon the *membrane* that lines the cavity, excluſive of external injuries. ——Inſects of various kinds have been found in theſe *ſinuſes*, according to Monſ. *Littre* and others.

OF TREPANNING.

HAVING gone through the various accidents incident to the head, and ſhown the great utility, and abſolute neceſſity of trepanning, in order to elevate, or entirely remove, depreſſed fragments of the bones, and to evacuate extravaſated blood, ſanies, &c. oppreſſing the brain, and producing the train of evils, we have given a detail of, we ſhall proceed to the manner of performing this very neceſſary operation, after taking notice of the parts we are adviſed to avoid in it, by the moſt eminent practitioners; though, indeed, there appears ſcarce any part of the *cranium*, from the frontal *ſinuſes* to the inſertions of the muſcles into the *occipital* bone, that may not be perforated with ſafety. There are ſome late inſtances in this kingdom, where the trepan has been ſucceſsfully applied to the frontal *ſinuſes*; and in a caſe wherein I was lately concerned, we found a neceſſity of taking in part of one of them, whence proceeded no inconvenience.—How far

far it might be practicable, to ſeparate the muſcles from, and apply the trepan to the inferior part of the *occipital* bone, almoſt to the *foramen magnum*, may be worth future conſideration; as it is no unreaſonable ſuppoſition, that a caſe may happen ſo circumſtanced, as to admit of no other remedy, and, according to *Celſus*, a doubtful one is better than none.*

The parts of the ſkull not eligible for the application of the trepan are. 1. The frontal *ſinuſes*. 2. The *ſutures*, in young ſubjects; for in old ones the adheſion of the *dura mater* to them is but little more, than to other parts of the *cranium*. 3. The middle of the *os frontis*, towards the noſe, where the *ſpinal* proceſs of that bone projects conſiderably.

* *Bontius*, a writer of the beſt credit, relates a ſingular caſe of a ſailor, whoſe head was cruſhed between the ſhip and a boat, in conſequence of which dreadful accident, the greateſt part of the *occipital* bone was taken away in fragments, almoſt as far as the *foramen magnum*, and the patient perfectly cured by him and another ſurgeon.——See a pertinent caſe, where the trepan was ſucceſsfully applied to the inferior part of the *occipital* bone, in the *Edinburgh* Medical and Philoſophical Commentaries, numb. vii. pag. 313.

ſiderably. 4. The anterior and inferior angles of the *parietal* bones, on the internal parts of which, run the arteries of the *dura mater*. 5. The *ſagittal ſuture*, on account of the longitudinal *ſinus* running immediately under it. 6. The *lambdoidal ſuture*, under which lies the courſe of the *lateral ſinuſes*. 7. The *occipital* bone, on account of its great inequality of thickneſs, and irregularity of its internal ſurface. 8. The *os temporale*, as the *temporal* muſcle muſt unavoidably be wounded in making room for the trepan: and laſtly, we muſt be careful, not to apply it to a yielding fractured part of the bone, that will not reſiſt the neceſſary force in making the perforation.

There are inſtances from the beſt authorities, of the ſucceſsful application of the trepan to all theſe exceptionable parts, to encourage a cautious and judicious practitioner, upon emergencies; to which, I will venture to join my own experience, hoping it may have ſome weight, in determining a matter of ſo much importance to ſurgery. The frontal *ſinuſes* have been trepanned with ſucceſs in *London* and *Paris*.——Perforations may

may be made lower down the *os frontis* in children, than in adults, without running the hazard of falling upon the *ſinuſes*, for they gradually enlarge, extending higher up, as they arrive at puberty.——I have applied the trepan near the middle of the *os frontis*, without meeting with any obſtacle from the *ſpinal* proceſs: and at the anterior and inferior angles of the *parietal* bones, without opening the *art. duræ matris*.——The operation has been performed by Mr. *Warner*, upon the *ſagittal ſuture*, when bits of bone ſtuck in the longitudinal *ſinus*, which he eaſily extracted, after enlarging the wound with his lancet, ſtopping the *hæmorrhage* with dry lint without any difficulty. Indeed, when we conſider the anatomy of the part, there does not appear that riſk of opening the *ſinus*, purely by the operation, as has been imagined.——I have twice done the operation upon the *occipital* bone, and as often upon the *temporal*, without any ill conſequences; though I was under the neceſſity of cutting away a conſiderable portion of the *temporal* muſcle; and ſince I publiſhed a caſe of the former, in my Caſes and Remarks in Surgery,

I have

I have read two, attended with ſucceſs, in No. 55, and one in No. 60, of the *Med. Muſeum.**

After having deliberately conſidered every circumſtance, and reſolved upon the operation, the inſtruments, ſponges, dreſſings, compreſſes, bandage, and every neceſſary thing, are to be diſpoſed in perfectly good order, that the operator may have nothing to ſeek, when he wants it. The head is to be ſhaved,

* My very worthy and ingenious friend Mr. *Stead*, apothecary to *Guy's* hoſpital, who lets nothing eſcape his attention that deſerves notice, writes to me thus.

" Though the lateral *ſinuſes* are very large, and when " conſiderably wounded may pour out ſo large a quantity " of blood as to occaſion the death of the patient, yet, " when a fracture demands the application of the trepan " directly upon the ridge of the *occipital* bone, it has " been attended with ſucceſs; as was the caſe of a per- " ſon that a friend of mine trepanned, where a ſmall " ſplinter of bone was found ſticking in the left lateral " *ſinus*, which, being gently extracted, only a ſlight " *hæmorrhage* enſued, ſo that he drew off, by this orifice, " what blood he thought neceſſary. A day or two " after, judging it proper to take away ſome more blood, " he punctured the *ſinus* with a lancet, and ſtopped the " bleeding both times, with a little dry lint and mode- " rate preſſure, with the greateſt eaſe and ſecurity."

ſhaved, if it has not been already, as indeed it ſhould all over, immediately after any of the preceding accidents, as we have before obſerved; it is then to be reſted and firmly held upon a perſon's knees, and with the knife appropriated to this uſe and the *ſcalprum*, a piece of the ſcalp is to be removed, of a circular, elliptical, or other figure, as the circumſtances of the caſe require, The ſcalping ſhould be of ſuch extent, as may give a fair opportunity of making as many perforations as ſhall be found neceſſary, as far as the ſurgeon's judgment and obſervation can direct him. He ought not to be ſparing in this reſpect, leſt he ſhould be under the diſagreeable neceſſity of extending the inciſion farther. The manner of cutting is to apply force enough to the knife, to carry it quite through to the bone at once, not bearing too much upon the point, as we have hinted, eſpecially if we cut over looſe fragments, which we ſhould endeavour to avoid; the edge of the knife ſhould be ſo inclined, as to cut rather more of the *pericranium* than the ſkin; when we have proceeded thus far, the *pericranium* is to be raiſed a little, with the point

point of a knife quite round the inciſion, and then the *ſcalprum* uſed, which will be found the beſt inſtrument to clear the bone of that membrane, as I have found by frequent experience. Should it be thought proper to proceed immediately to trepanning, if any conſiderable veſſels have been divided in ſcalping, they muſt be ſecured by needle and ligature; but when we do not intend performing the operation directly, dry lint with compreſs and bandage, is generally ſufficient to reſtrain the *hæmorrhage*; but ſometimes the preſſure of an aſſiſtant's fingers upon it will ſerve that purpoſe, without a ligature, when we determine to proceed to the operation directly.

That kind of trepan, called the *trephine*, is now in general uſe, I believe, in all places; it is more commodious than the other, and can be better managed and regulated in the operation, as the different bearings may require; and it will cut full as faſt, being worked both backwards and forwards. Before we begin the operation, we muſt fix the patient's head ſo, that the light may fall properly upon it, and in ſuch a convenient poſition,

ſition, that the inſtrument may be placed perpendicularly upon the part, and of ſuch a height and manner, that our attitude may be eaſy to us during the operation, which often proves tedious, requiring many perforations; as we may ſee at large *en Mem. de l'Acad. Roy. de Chirurgie*, tom. 1. *ſur la multiplicité de trépans, par Monſ. Queſnay.**

* *Scultetus* ſays, he was obliged to make ſeven perforations, in a fracture with great depreſſion. —— *Glandorpius* ſays, his maſter *Spigelius* made the ſame number upon the like occaſion.——*Dionis* made twelve.—— *Philip* count of *Naſſau* had twenty-ſeven made in different parts of his head, by *Henry Chadborn*, a very eminent ſurgeon; and that nobleman has atteſted the cure under his own hand.——I made thirteen in the caſe of an old man, with ſucceſs, as related in the 2d volume of this work. —— I have, within a few years, been concerned in five caſes, in which it was found neceſſary to make four perforations, in one of which there was a colliſion and ſeparation of the *coronal* ſuture about one-third of an inch, the whole length of it, with many of the indentations of the bones broken off, and *fiſſures* extending, in various directions, a great way from thence; yet the patient recovered, being largely ſcalped and trepanned in due time, by two very able ſurgeons, the late Mr. *Cooper* and the preſent Mr. *Lewis*, of *Bungay* in *Suffolk*.

Whether the patient has the operation performed in bed, or ſeated in a chair, I have always found, that reſting his head on a pillow, with a board underneath it, upon the knees of an aſſiſtant, is preferable to any other manner; for being thus placed, the aſſiſtant will have more power to keep it ſteady, to reſiſt the motion of the inſtrument. Theſe circumſtances, how trifling ſoever they may appear to ſome, will be found, I am perſuaded, of conſiderable conſequence in practice, from what I have often experienced.——When the head is well adjuſted, the next ſtep is to make a hole with the perforator, deep enough to fix the central pin of the *trephine*, in order to prevent the ſaw from ſlipping out of its circular courſe, till it has formed a *ſulcus* ſufficiently deep to be wrought ſteadily in, and then the pin is to be taken out. If the ſkull is thick, the teeth of the ſaw muſt be bruſhed clean now and then, during the terebration; and dipping it into oil, as often, will greatly facilitate the motion, and expedite the operation, making it leſs diſagreeable to the patient, if he has his ſenſes; and, in order to

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loſe no time, it would not be amiſs to be provided with two inſtruments of the ſame ſize.——We muſt remember, after having made ſome conſiderable progreſs in the operation, to obſerve this good rule, *Feſtina lentè*, examining the *ſulcus* often with a pick-tooth, or ſome other proper inſtrument, in order to diſcover where the bearings are neceſſary to be made.——Theſe precautions are of more conſequence, when we are employed in perforating a part of the ſkull, that we know has an unequal thickneſs, eſpecially after having paſſed the *diploë*; and though we are told by writers in general, that we may ſaw boldly, till we come at the *diploë*, generally to be known by an appearance of blood, yet we ſhould be upon our guard in this point; examining if the piece be looſe, when we have ſawn ſome way into the bone, leſt we ſhould happen, through inadvertence, to wound the ſubjacent membrane; for in ſome parts of the ſkull, there is naturally very little *diploë*, and in old ſubjects, ſcarce any remains, to afford direction to our judgment, by the bloody appearance: and for the ſame reaſon, it is alſo to be remembered,

that children's ſkulls are very thin.——When the piece is quite looſe, it is to be taken out with the *forceps*, contrived for this purpoſe; and if the lower edge of the perforation is left jagged, it is to be ſmoothed with the *lenticular*, that it may not irritate the *dura mater*.——The next ſtep, is to raiſe the depreſſed piece or pieces of the *cranium* with the *elevator*,* or to extract the fragments of the bone, grumous blood, or any extraneous body, with proper inſtruments. —— After this, if there appears good reaſon to apprehend that blood, lymph, or matter, is contained under the *dura mater*, we ſhould open it directly with a lancet very cautiouſly, endeavouring to avoid the blood-veſſels ramified upon it, and thoſe which lie immediately under it: and, on this occaſion, it will be prudential to conceal the inſtrument, as much as we can, by wrapping it all round with

* Within a few years, the *elevator* has received great improvement, by the addition of *fulcra* to reſt upon the ſound part of the bone. Monſ. *Petit* began the improvement, and it was perfected by Monſ. *Louis*.——It is now adopted by our ſurgeons, and found among the modern ſets of inſtruments for this operation.

with tow almoſt to the point, in order to prevent impreſſions being made upon the ſpectators to our prejudice; for though the practice is ſupported by reaſon, and the authority of the beſt ſurgeons, yet nothing but ſucceſs can effectually ſecure our reputation againſt the impertinence of buſy people, who judge and determine from events, without conſidering circumſtances.——I have been ſo fortunate as to ſucceed twice, evidently ſaving the patients lives by this means: and lately I aſſiſted a ſurgeon, deſervedly of great character, in trepanning a boy, on account of a very extenſive fracture upon the right *parietal* bone, three days after the accident, and we found, upon removing a large portion of the ſkull, a conſiderable quantity of a ſerous fluid collected under the *dura mater*, which, upon preſſing with our fingers, bubbled up through ſeveral ſmall holes in it, made by its violent detachment from the ſkull. We agreed upon opening this membrane more than an inch, with a pair of very fine ſciſſars, for the free evacuation of the extravaſated fluid; and the patient recovered, without any threatening ſymptoms ſuper-

vening, and thoſe that attended before the operation, vaniſhed ſoon after.*

When we have recourſe to the trepan, on account of a *fiſſure*, in which the bone will not yield, we ſhould apply the inſtrument ſo as to include part of it, if not directly over it, as it is moſt likely, the extravaſated blood, or lymph, ſhould be found directly underneath it: and when the *fiſſure* is of great extent, it may be proper to make a perforation at each end, if the whole can be conveniently brought in view; and, in ſome caſes, more perforations may be requiſite, according to the courſe of it, even to its full extent.

When we propoſe to make ſeveral perforations, in order to remove depreſſed fragments of the bone, that are firmly fixed, and having the internal ſurface larger than the external, or to raiſe them ſufficiently, it is neceſſary to apply the trepan, as near the fractured parts, as they will admit of; making the perforations adjoining, to ſave the trouble

* See Vol. II. where, in a caſe ſimilar to this, the *dura mater* was ſucceſsfully opened.

trouble of cutting the intermediate ſpaces with the head-ſaw: and, as before hinted, we ſhould invariably obſerve, to make the perforations in the moſt depending parts we can, for the ſame reaſon, as we endeavour to obtain depending openings in the fleſhy parts. And in perforating the ſkull, where there is great inequality of its thickneſs, it appears more adviſable, to raiſe the piece, before it is cut quite through in every part of it, to obviate injuring the ſubjacent membrane with the ſaw.

When the ſkull has ſuffered an injury upon a *future*, and it is not thought adviſable to uſe the trepan there, eſpecially in young ſubjects, in whom the *dura mater* adheres more ſtrongly than in adults, as has been remarked, we ſhould always remember, to make a perforation on each ſide of the *future*, for this obvious reaſon, becauſe there cannot be a free communication between the one ſide and the other, on account of the attachment of that membrane to the *future*.

After the elevation of the fragments of the bone, or the removal of them, the extraction of extraneous bodies, and the eva-

cuation of extravaſated blood, lymph, or ſanies, &c. the membranes may be dreſſed with *unguent e gum. elemi*, extolled by *Franciſcus Arcæus*, the inventor of it, made of a ſofter conſiſtence with *balſ. e copaib.* or ſome other natural balſam; applying it juſt warm, with a feather, and ſoft lint lightly over it, dreſſing the other parts, as we have already directed in wounds of the head: after which, it may be proper to embrocate the whole head with *ol. & acet.* adding a little *ſpirit. lavend.* and to apply a plaſter of *cerat. alb.* or ſome other ſuch eaſy application, with gentle compreſs and bandage. The proper bandages upon this occaſion are what the *French* call the *grand couvre-chef*, and the *capeline* or reflex bandage, which require great care and exactneſs in their application, for the patient's eaſe. A bandage with ſix tails, or a kind of coif with lappets affixed to it, may be found very applicable in ſome caſes; but to ſerve this purpoſe, the ſurgeon muſt occaſionally exerciſe his invention.

After the dreſſing, the patient is to be placed in as eaſy a poſition in his bed as poſſible, with his head and ſhoulders elevated a little

little more than ordinary; and the rules we have laid down in the cure of wounds are to be duly obſerved.——Warmer applications and bandages are required in winter than in ſummer.——The degree of heat in the room muſt be regulated, according to the temperature of the ſeaſon, and it is neceſſary to exclude the light.——In injuries of the head, bad ſymptoms are apt to come on ſooner in warm, moiſt, ſultry weather, than in a cold ſeaſon, when it may be very beneficial to make the circumambient air warm, and dreſs the wound as expeditiouſly as poſſible, defending it from the attack of the cold air. ——A ſtrict regimen and obſervance of the non-naturals are now of the greateſt importance to be attended to; for a ſlight tranſgreſſion therein may prove of fatal conſequence, as we have amply evinced.

When the digeſtion of the wound proves kind, we ſhall ſoon obſerve granulations of fleſh, of a good complexion, ſhooting from the extremities of the veſſels, and throwing off the parts of the *dura mater*, that may have ſuffered; which, by extending themſelves and twiſting one with another, form

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in the aperture, a ſubſtance having the appearance of fleſh. The ſame operation of nature, in a longer time, throws off exfoliations from the circumference of the perforation, and other parts of the denudated ſkull, thicker or thinner, ſooner or later, according to the age and conſtitution of the patient, the degree of injury the ſubſtance of the bone has ſuſtained, the ſeaſon of the year, &c. The granulations which ariſe from the different parts uniting together, conſtitute the organized or vaſcular, carnous ſubſtance, which is called the incarnation of the wound: and this regenerated ſubſtance, in young ſubjects, generally acquires a perfectly boney hardneſs in the perforation, but ſeldom in old perſons.*

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* I was deſired, ſome years ago, to ſee a lad about twelve years of age, who had been trepanned two years before, by a good ſurgeon, on the left ſide of the *os frontis*. The wound was healed, but in the very centre of the perforation, I obſerved a pulſation of ſmall extent. Upon gentle preſſure in this boy, the boy complained of a ſlight degree of pain, then his eyes began to roll about and have uncommon motion, ſoon after this his ſight grew dim, his ſenſes became affected, and his ſtrength

A fungous ſubſtance is very apt to fill up the perforation after trepanning, ſometimes growing to a conſiderable ſize, reſembling a muſhroom with the ſtalk in the perforation; and ſometimes the *dura mater* itſelf is forced through, by the propulſion of the ſubjacent parts, for want of an equable reſiſtance, to ſupply the place of the bone. When there is a laceration of the *dura mater*, the *pia mater*, and brain itſelf, may protrude, as remarked by *Hildanus*, his maſter *Slotanus*, *Tulpius*, *Schenkius*, &c.

In order to remove theſe *fungi*, ligature, exciſion, and eſcharotics, have been recommended; and ſometimes practiſed with fatal effects, throwing the nervous ſyſtem into great diſorder.* And as there is ſo much to be

ſtrength failed; and had the preſſure been continued, he certainly would have fallen down; but upon removing it he appeared perfectly well again preſently. I repeated the experiment two or three times with the ſame effect. This caſe is ſomething like the beggar's at *Paris*, known to almoſt every body.

* An excellent practitioner, with whom I am particularly acquainted, told me, that upon cutting off one of theſe *fungi*, his patient was immediately thrown into univerſal

be apprehended from theſe methods, we ſhould, by all means, take early care to prevent the growth of ſuch excreſcences; which, if neglected, may increaſe to a great ſize in a ſhort time; an extraordinary inſtance of which I obſerved ſome years ago, in an hoſpital in *London*, upon the examination of a young woman's head, who died about ten days after having been trepanned in three different places, on account of a concuſſion of the brain. Through each perforation, a fungoſity was grown conſiderably above, and ſpread upon, the ſurface of the bone, reſembling what I have deſcribed. Extravaſations were alſo found, from ruptured veſſels in the plicatures of the *pia mater*, with a large quantity of a lymphatic fluid in the ventricles of the brain.

I have found, by repeated trials, that *Belloſte's* method will effectually anſwer the important

verſal ſpaſms, which made him fear the loſs of his life would have been the conſequence of it. Since this alarming appearance he has always followed the preventive method I am about recommending, without obſerving any manner of inconvenience ariſing from the uſe of it, as did I ever myſelf.

portant end of preventing the growth of theſe excreſcences, when the *dura mater* is not lacerated. And once I experienced great advantage from it in a caſe where it was lacerated; under which circumſtance, perhaps it may be of more ſignal ſervice. The perforated plate of lead, invented for this purpoſe, is deſcribed by a figure in *Belloſte's* Hoſpital Surgeon, and in *Heiſter's* Syſtem of Surgery, pl. 15. fig. 14. 15. More than thirty years ago, before I had read that uſeful book, I made and uſed it myſelf, for the ſame obvious reaſon, that put him upon the invention, and which at the very firſt ſucceeded to my wiſh. It is eaſily made, after being exactly marked out with the crown of the trepan.*

The beſt method of uſing this plate, that I have been able to diſcover from my experience, is firſt to apply to the *dura mater* a *ſindon*, ſpread with the balſam recommended, or dipped into it moderately warm, according to the ſtate the membrane appears in; then

* See note annexed to 4th caſe of a fracture of the ſkull, in Vol. II.

then the plate is to be exactly adjuſted in the perforation upon the *ſindon*, having the ears of it turned back upon the ſkull; over which, a compreſs, conſiſting of a few doubles of common plaſter, with a piece of very thin ſheet-lead or card interpoſed, is to be laid; filling the wound up with even lint, rather above the level of the ſcalp; then a ſmall, eaſy compreſs of cloth, faced with *cerat. alb.* is to be applied, with a piece of card or thin ſtiff paper on the outſide of it; over which, ſtrips of common plaſter, about an inch broad, are to be laid crucially, extending two or three inches beyond the compreſs. By this means, the plate will be properly confined, and the degree of preſſure may be eaſily regulated, without inconvenience to the patient, or interrupting the diſcharge at the wound; and ſhould a greater degree of preſſure be required, it may be obtained, by thickening the compreſs, and making one of the ſlips of plaſter paſs through a ſlit in the other, as in the uniting bandage. After proceeding thus far, the head is to be embrocated, and a large thin compreſs, ſpread with *cerate*, applied over

over the crucial plaſters, with eaſy bandage, as before directed. When the *dura mater* is granulated with fleſh, the *ſindon*, or lint, moiſtened with a mixture of *tinct. myrrhæ* and *aq. calcis*, is a good application; and the other parts of the wound are alſo to be attended to, according to the rule of ſurgery which we have before laid down, in order to prevent the luxuriance of fleſh, till the exfoliations are completed; for ſhould this point be neglected, and looſe fleſh ſuffered to creep upon the bone, from the circumference of the wound, much inconvenience and trouble, beſides pain to the patient, might proceed from ſuch inattention, as I have ſeen very lately.

Though from what I have obſerved, fungoſities are more to be guarded againſt after ſingle perforations in trepanning, yet in a great loſs of ſubſtance of the ſkull, a perforated plate of lead well adapted to the ſpace, having its edges carefully conveyed a little way between the ſkull and the *dura mater*, this being firſt dreſſed as directed, may prove very uſeful, as has been experienced

rienced by other ſurgeons as well as myſelf. Beſides the good effect it may produce in ſupplying the natural preſſure of the bone for a due time, it will give more room for the evacuation of any fluid that may be there contained, and alſo defend that membrane againſt the aſperities of the bone.

By theſe meaſures, I have always been able to obviate the inconveniences, ariſing from fungous excreſcences, in conſequence of trepanning, &c.

An abatement of the ſymptoms after the operation, with a good aſpect of the wound, in a healthy ſubject, give us reaſon to hope for ſucceſs; but if the ſymptoms continue threatening, with a dryneſs, glaſſy appearance, or livid colour, of the wound, or a diſcharge of a fetid gleet from the membranes or brain, they are to be looked upon as very bad omens: however, we are not to omit the uſe of all rational means, having inſtances enough, upon record, of the happy event of the moſt alarming caſes to encourage our perſeverance.——The ſymptoms, after the operation, may require frequent

quent bleeding, as well as a ſtrict regimen, and obſervance of the non-naturals, as has been particularly exemplified in the gentleman's caſe, which I have mentioned, who was trepanned on the *temporal* bone.

It is ſurpriſing ſometimes to ſee the very ſudden good effects of the operation, as in the clergyman's caſe I have related.—— Profeſſor *Monro* ſays, he ſaw a ſoldier trepanned on account of a fracture, with depreſſion of his ſkull, when he was quite ſtupid, and who almoſt perfectly recovered his ſenſes, half an hour after the operation; his face and eyes too, which were prodigiouſly ſwelled before, became viſibly leſs in a ſhort time.

Should the patient, at any time after the cure, complain of pain or diſorder in his head, with ſymptoms of plenitude, recourſe ought to be had immediately to bleeding and gentle purging, with the obſervance of a ſpare diet: and for ſome time after his cure, he ſhould always be very exact in his regimen and government of himſelf, both as to body and mind; and it will be very prudent

to wear, for ſome conſiderable time, a thin braſs, ſteel, or tin plate, to defend the part againſt external injuries, eſpecially if there has been any great loſs of the bone: under which circumſtance, in old perſons, ſuch a defence may be found neceſſary for life.*

OF

* Theſe eminent writers may be occaſionally conſulted upon this ſubject. *Hippocrates*, *Berengarius*, *Hildanus*, *Fallopius*, *Magatus*, *Scultetus*, *Fienus*, *Tulpius*, *Schenkius*, *Bohnius*, *Glandorpius*, *Paré*, *Marchetti*, *Wiſeman*, *Belloſte*, *Van Swieten*, *&c.* and more particularly Monſ. *Queſnay's* Diſſertations, in *Mem. de l'Acad. Roy. de Chirurgie*, tom. 1.——Mr. *Pott's* judicious treatiſe upon this ſubject ſhould by no means be forgotten: and in the ſecond volume of this work, there are ſome extraordinary caſes.

OF TUMOURS ON THE HEADS OF NEW-BORN CHILDREN.

AS we have no deſcription of theſe tumours, that can be relied on, in any writer that I have ſeen, I here ſubjoin a ſhort account of the nature, and proper method of treating them, to aſſiſt the judgment and practice of the unexperienced.

This kind of tumour proceeds from an extravaſation of blood; probably, in conſequence of ſome injury in a laborious, haſty, or injudicious delivery; as time ſhould always be allowed for a gradual dilatation of the parts, to admit of the excluſion of the fœtus with ſafety. It is ſeldom obſerved on any other parts of the head, than the *parietal* bones; and the extravaſated blood is more frequently lodged between the *pericranium* and the *cranium*.

This tumour is generally circumſcribed by a ridge, when the extravaſated fluid is contained between the *cranium* and *pericranium*, and feels as if there was a depreſſion or de-

ficiency of the bone; but the deception is owing to the fluid in the diſtended *pericranium* yielding to the fingers, and to the ridge circumſcribing the tumour, which may be taken for the edge of the bone, without very accurate examination.

Some ſurgeons have looked upon this ſort of tumour as an *aneuryſm*, proceeding from the inſide of the ſkull; others as a *hernia* of the brain; but was either of theſe the caſe in queſtion, it muſt appear between, and not upon, the bones, as it does; and, according to the firſt ſuppoſition, a pulſation would be obſerved in it. That eminent practitioner, Monſ. *Le Dran*, one of the beſt and moſt accurate of the *French* writers, had very confuſed ideas of this kind of tumour, as we may ſee in his firſt obſervation.*

The ſurgeons of the Foundling Hoſpital, who have had the greateſt opportunities of diſcovering the nature of theſe tumours, and the beſt method of cure, from their large experience,

* *Sur la tumeur à la tete d'un enfant nouveau né.*—— Monſ. *Leveret* ſlightly mentions this kind of tumour in *l'Art des Accouchemens.*

experience, ſay, they generally ſucceed by opening them, in caſe the children are otherwiſe healthy; and that they prefer this method, rather than waiting in expectation of abſorption by any other, apprehending that the bad conſequences they have ſeen may proceed from the putrid quality of the fluid, contracted by its ſtagnation. They make an inciſion the whole length of the tumour, lay ſoft dry lint under the edges of the wound, to favour the diſcharge of the extravaſated blood, after preſſing out as much as they can without bruiſing the tender parts, and then apply a pledget of common digeſtive over the lint, with eaſy compreſs and bandage. By this treatment, thoſe gentlemen have aſſured me, that they very ſeldom meet with any trouble in the cure, to diſcourage the practice; but when the blood lies next the bone, very thin ſcales will ſometimes riſe and retard the cure a little.*

* I viſited that hoſpital with my friend Mr. *Tomkyns*, on purpoſe to get the beſt information I could in this matter; and at a houſe that is an appendage to it, appropriated for the reception of children as ſoon as they are

Some other practitioners, of experience too, whom I have talked with upon this ſubject, are againſt opening theſe tumours; adviſing the application of compreſſes, moiſtened in warm auſtere red wine and vinegar, to be renewed as often as they grow dry, and ſay they have generally obſerved abſorption of the fluid to be the effect of this method, without bad conſequences: however, ſhould there appear no diminution of the tumour, by regularly purſuing this method a reaſonable time, it will then certainly be adviſable to open it, leſt the fluid ſhould be abſorbed in a putrid ſtate, or the bone injured by it, whence bad conſequences might enſue: and if the bone received an injury originally, the neceſſity of opening it is indiſputable.*

I have

are born, I ſaw ſome of theſe tumours opened, ſome under cure, and many that had been cured by opening: and according to the hoſpital admiſſion-book, which I examined for ſome years back, I obſerved that ſcarce a week paſſed, without a caſe of this kind having been admitted.

* I have in my poſſeſſion a *parietal* bone, that was fiſſured in a caſe of this nature, with the *pericranium* annexed to it; ſhowing the extravaſation was between that and

I have ſucceeded in ſome caſes by both methods, attending to theſe circumſtances and conſiderations, to direct my judgment and practice.——I have generally added *ſal. ammon. crud.* to the above mentioned applications.

and the bone, in which the circular ridge I have mentioned, evidently appears.

This bone is repreſented in theplate facing p. 337, fig. 1.

A. A. A. A. The elliptical ridge formed by the increaſed thickneſs of the pericranium over the right parietal bone, which was the boundary of the tumour; and under that membrane the extravaſated blood was contained.

B. B. A portion of the ſcalp removed perpendicularly as far as the ridge, ſhowing the fiſſure C.

OF WOUNDS OF THE FOREHEAD, FACE, AND ITS PARTS; NECK AND ITS PARTS, AND THE TONGUE.

INCISED wounds of the forehead and face require nothing peculiar in their management. The lips of them are to be kept as much in proximity as poſſible by the dry ſuture, as has been deſcribed, to prevent deformity of the *cicatrix*. And in lacerated or contuſed wounds of theſe parts, the general rules that have been preſcribed in ſuch caſes, are to be obſerved: but when either of the *ſalival ducts* * is totally divided, in a wound of the cheek, or even when partially divided, and cannot be cloſed up by the generation of fleſh, there will conſequently be a great effuſion of *ſaliva* eternally; and the courſe of this watery fluid muſt be diverted, by making a perforation into the mouth with ſome proper inſtrument, drawing a ſeton through, continuing it a due time, and then endeavouring

* The ſuperior *ſalival duct* is called *ductus Stenonis*, and the inferior, *ductus Whartoni*.

vouring to heal the external aperture.—— Profeſſor *Monro* recommends this method; and I have practiſed it with ſucceſs to my wiſh.*

Sometimes in wounds of the glandular parts hereabouts, *lymphatics* are alſo divided, diſcharging a great quantity of ſuch a kind of fluid; but it is not ſo difficult to reſtrain this effuſion, as that proceeding from the diviſion of the *ſalival ducts*. Lint moiſtened in *alcohol. vin.* or a ſolution of *ſacch. ſaturn*, in *aq. calc. & alchohol. vini p. æ*, applied and aſſiſted with a proper degree of preſſure, and dreſſing ſeldom, will generally anſwer the purpoſe, as I have experienced in ſeveral inſtances; particularly in two, where the diſcharge was very profuſe, from wounds of the *parotid* glands. This treatment may be firſt tried, when the *ſalival ducts* are opened, before making the perforation into the mouth, taking particular care in reſpect to the compreſſion; a caſe of which kind, that ſucceeded, is mentioned in Vol. II.

Wounds

* See Med. Eſſays, vol. 2. eſſ. 13. See alſo Monſ. *de Roy's* method, in *Saviard's* obſervations.

Wounds of the lips, when totally divided, muſt be ſtitched as deſcribed for the hair-lip, pag. 149; otherwiſe the ſkin will draw over each lip of the wound ſeparately, and prevent the reunion. The ſame will happen in wounds quite through the wings of the noſe, ear, or eye-lids; but the latter require very nice and tender management, from the exquiſite ſenſibility of the parts; on which account, beſides the general method here laid down as to the treatment of the wound itſelf, we muſt particularly attend to the prevention or removal of pain, inflammation, &c. by bleeding, laxatives, and a proper regimen, as well as by anodyne, emollient, and refrigerating topics; as a fomentation prepared with poppy-heads; emollient herbs, &c. boiled in water, with the addition of milk, and a white-bread poultice; and, before the application of the latter, a plaſter of a cooling *cerate* ſhould be applied, dreſſing the wound with ſome mild balſamic medicine. *Emulſ commun. & julep. e camphora p. æ.* make a good *collyrium*, to be uſed in waſhing purulent matter or other foulneſs out of the eyes, in a tender and inflamed ſtate.

ſtate. This general method may alſo be followed in a wound of the eye itſelf; which is very apt to inflame, and be attended with a great degree of pain, extending into the head, and ſometimes exciting a violent fever, delirium, &c. therefore the utmoſt attention is to be paid to wounds of this part at firſt, in order to obviate bad conſequences.*

——It

* It being now generally believed that the patient is more liable to bad accidents in conſequence of extracting the *cryſtalline*, than in depreſſing it in the *cataract*, *Daviel's* method loſes credit with many of the moſt eminent of the profeſſion; and in ſeveral inſtances I have obſerved ſuch bad conſequences, as could not have happened by depreſſion, particularly in one caſe, though the celebrated *Wenzel* was the operator.——Monſ. *Daviel* has had the honour of this diſcovery aſcribed to him, but the ſame operation was practiſed ſixty years ago by Monſ. *St. Ives*, and then by *Mery* and *Petit*, when the *cryſtalline lens* was become differently diſeaſed, and had paſſed through the pupil into the anterior chamber of the eye; in which caſe depreſſing of it is impracticable: and probably it will be found moſt adviſable to confine this operation of extracting it to the diſeaſe thus circumſtanced.

See *St. Ives des Maladies des Yeux*, chap. xxi. and what Mr. *Pott* ſays, in reſpect to *cataracts*, in his Chirurgical Operations, lately republiſhed with the reſt of his works.

——It is worth conſidering, with what kind of weapon, and in what direction of it, the wound was inflicted; for through the orbit it might eaſily penetrate even to the brain, of which we have an inſtance in *Ruyſch.*—— Some time ago, I was deſired to viſit a perſon in *extremis*, four days after receiving a wound of this nature by a cow's horn. And lately, a ſurgeon aſked me to viſit a patient with him, who five days before had a piece of wood forced into the orbit of one of his eyes, penetrating quite to the brain, whence direful ſymptoms enſued: and that day the convulſive contraction, called the locked-jaw, came on; ſoon after which he died.

The neck is a very dangerous part to receive a wound in, on account of the large blood-veſſels, the *trachea*, the *œſophagus*, *ſpinal* marrow, and recurrent nerves, which have a great influence upon the voice.—— When a *carotid* artery is opened, we muſt uſe our utmoſt endeavours to paſs a ligature about it, above and below the opening, and if that cannot by any means be effected, try other expedients, as mentioned in pag. 102. ——If the internal *jugular* vein happens to be

be wounded, and it can eaſily be come at, a ligature is adviſable above the aperture; or a *ſtyptic*, or ſome fungous ſubſtance with good compreſſion, may anſwer the end.——In the ſecond volume of the *Mem. of the Royal Academy of Surgery*, there is an ingenious and well adapted compreſſive machine for this purpoſe.——When the *hæmorrhage* is ſtopped, the wound is to be dreſſed as has been directed.

When the *trachea* or *œſophagus* has received a large wound, the interrupted or twiſted *ſuture* is neceſſary; and in ſome caſes, ſtrips of adheſive plaſter may be found uſeful, either with or without the *ſuture*. The latter of theſe parts is very difficult to come at, from its ſituation behind the *trachea*: and if either ſhould be totally divided, little is to be expected from art.*

Theſe wounds are to be treated in the common manner, with agglutinating, balſamic applications and eaſy bandage, obſerving

* See *Eſſai ſur Oeſophagotomie, par Monſ. Guattani, en Mem. de l'Acad. Roy. de Chirurgie*, tom. 3.

ing an exact regimen. The patient ſhould be ſtrictly enjoined to live upon a ſoft, balſamic diet, of ſuch conſiſtence, as may eaſily ſlip down, with as little of the action of deglutition as poſſible. His body ſhould be kept open with the frequent repetition of clyſters, leſt any kind of purging medicine, taken by the mouth, ſhould offend the ſtomach and excite vomiting, which might affect the wounded parts, and prove of fatal conſequence.——When deglutition is wholly obſtructed, without a total diviſion of the parts, we have good authorities to endeavour to ſupport the patient, and prevent his famiſhing, by nutritive clyſters, till the cauſe of the obſtruction can be removed; as *Oribaſius*, *Ætius*, *Tulpius*, *Bartholinus*, &c. have recommended.

Benedictus Bonacurſius ſays he cured a perſon, who cut his own throat in priſon, making a large wound in the *trachea* and *æſophagus*, which was deemed incurable.

Bodinus, in *Theatro Naturæ*, ſays, that *William* prince of *Orange*, having received a wound in his throat upon the *larynx*, loſt

loſt the ſenſe of taſting; and that a *French* ſoldier, from ſuch an accident, became mute.*

AN HISTORY OF A SINGULAR CASE, AND OF A VERY SINGULAR NATURE.

I HAVE lately had the opportunity of examining with a phyſician and a ſurgeon, the parts which ſuffered by an *hypochondriac*, who cut his throat with a razor. The wound extended almoſt from ear to ear, but neither of the *carotid arteries*, or *internal jugular veins* was opened. The parts were divided into the *pharynx*, preciſely level with the *thyroid cartilage*, in ſuch a manner, that in the act of deglutition, every kind of aliment, in its progreſs towards the *pharynx*, bore down the *epiglottis*, letting moſt part of it paſs through the wound, ſome falling into the *trachea* by the *glottis*, exciting a violent, convulſive, ſuffocating cough; but little or none

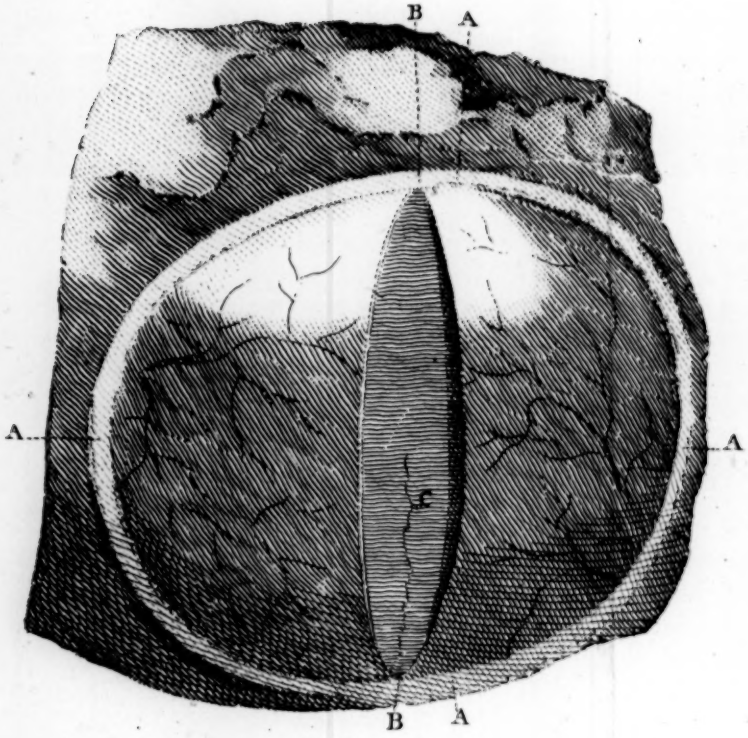
* See *Mem. par Monſ. Verdier, en Mem. de l'Acad. Roy. de Chirurg.* tom. 3. *ſur une playe à la gorge, avec des remarques intereſſantes à ce ſujet.*

none arrived at the *pharynx* to deſcend the *œſophagus*; yet he lived fourteen days, having nutritive clyſters frequently given.

In order to have demonſtrative ideas, of the wound under conſideration, take a ſufficient portion of the *trachea* and *œſophagus* of a ſheep or calf, together with the *larynx* (which is the ſuperior part or head of the *trachea*, conſiſting of the *epiglottis*, the *thyroid*, two *arytenoid* and *cricoid cartilages*) the *pharynx*, *os hyoides*, and *tongue*: then make a ſemilunar wound, at the very edge of the *thyroid cartilage* into the *pharynx*: ſuſpend theſe parts by the *os hyoides*, and let the wound have its full *hiatus*, by hanging a weight at its lower and anterior part; then paſs your finger in the courſe of the aliment in deglutition, and you will find it propels the *epiglottis* into the wound, by the ſlighteſt touch imaginable.

Explanation

Fig. 1.



Vol. 1. *p.* 337.

Fig. 2.

Explanation of Fig. 2, *in the Plate* 4, *annexed.*

A. A. The os hyoides, drawn up by the action of the muſcles.

B. B. The courſe of the wound.

C. C. The thyroid cartilage.

D. D. The ligatures, including the os hyoides, and paſſing through the edge of the thyroid cartilage, &c. with that in the middle over the epiglottis *a*.

E. The trachea.

F. The œſophagus.

*** Both the engravings in this plate were accurately made from the parts, which I have in my poſſeſſion.

In this caſe, the *epiglottis* being drawn out of its natural poſition, into a very inclined plane, by the flying up of the *os hyoides*, upon the diviſion of the muſcles, attached to its *baſis*; and the *epiglottis* having loſt its ſupport, the ſmalleſt weight of aliment neceſſarily made it yield immediately: and even when the inclination of its plane was in ſome meaſure leſſened, by bringing the head for-

wards, and by the interrupted *ſuture*, which was made in the teguments, ſoon after this fatal accident happened, yet that obſtruction to the cure was not remedied.

In this ſtate the parts remained eight days, then the ſtitches were taken out; and the true nature and condition of the wound evidently appearing, a ſtitch was made from the inferior part of the *os hyoides*, brought down by the diſſecting hook, to the ſuperior part of the *thyroid cartilage*; but the cough ſtill continuing, in conſequence of attempting to ſwallow any food, and alſo at other times, by the irritation of matter falling upon the ſame parts, the ſtitch was ſoon broken out, rendering this rational ſtep entirely fruitleſs: had it been practiſed at firſt, and the patient nouriſhed wholly by clyſters, in order to have prevented the cough for ſome days, perhaps it might have ſucceeded.*

Had

* In a caſe of this kind, the clyſters ſhould be given in ſmall quantities, and injected as far up as poſſible, by the ſyringe appropriated to this uſe.——The mouth may be kept moiſt, by frequently holding a ſmall quantity of ſome ſmooth, pleaſant thing in it, without attempting to ſwallow; which may be taken up by the abſorbing veſſels.—

Had the true nature of the wound been at firſt diſcovered, and could a proper number of ſtitches have been made, with very ſtrong, well-waxed, flat ligatures, encompaſſing the *os hyoides*, and paſſing through the *thyroid cartilage*, a few lines below its edge, including the teguments, and ſtudiouſly endeavouring to avoid the *epiglottis*, tying the ligatures with ſlipping knots, for obvious reaſons, this ſeems to us the moſt probable method to have anſwered the end: or, could only one ligature have been paſſed, in this manner, by a needle more than ordinarily curved, with the aſſiſtance of the *port d'aiguille*, or by a hafted needle, having an eye near the point, round the *baſis* of the *bone*, after drawing it down with a ſtrong diſſecting hook, perhaps that might have given an opportunity of other ſtitches taking place on each ſide of it, by paſſing through the teguments and edge of the *thyroid cartilage*; if found abſolutely impracticable to convey one

ſels.—Reſt and quiet ſhould be moſt ſtrictly enjoined; and, to procure ſleep, *tinct. theb.* may be occaſionally given in the clyſters, at diſcretion.

on each ſide about the bone, at a little diſtance from its *baſis*:* and it may be worth conſidering, how far purſuing the *bone* with a longitudinal inciſion, might facilitate the paſſing a ligature round its *baſis*.——Here, indeed, lie difficulties that may prove inſuperable; yet, as it is a matter of the laſt importance, we cannot forbear recommending every rational attempt which occurs to us, to the conſideration of our brethren; and not knowing we have a ſimilar caſe to it, in the records of ſurgery, though, conſidering the circumſtances, it is not improbable to have often happened and paſſed unnoticed; this conſideration is a farther encouragement to our offering theſe hints.

When a perſon is ſo unhappy as to attempt ſuicide, in this manner, and happens to wound

* Strips of ſticking-plaſter may be found uſeful in aid of the ſtitches, by paſſing from the hinder part of the neck, and crucially over the wound, bringing the head forwards, and keeping it in that poſition by a bandage properly adapted to this purpoſe, at the diſcretion of the ſurgeon, who ſhould lay the ſtrongeſt injunction upon the patient and his attendants, for the obſervance of this neceſſary precaution, in reſpect to the inclination of the head.

wound both *trachea* and *œſophagus* at the ſame time, it muſt generally be below the *thyroid cartilage*, that, in adults, being almoſt as hard as bone, the ſolidity of it increaſing with age: beſides, from the looſe attachment of this *cartilage* to the adjacent parts, it readily gives way, abating the force of the ſtroke; ſtill they may ſuffer at once, by the cut of a broad ſword, or the thruſt of a ſharp-pointed weapon.

In the ſpace of a year, a farmer's ſervant came to me twice with a pin and once with a needle ſticking in the *œſophagus*. The needle and one of the pins I extracted with a pair of *forceps*, properly curved to ſerve that purpoſe; the other lying out of the reach of the *forceps*, I ventured to attempt to thruſt down with a whalebone, having a piece of ſponge tied ſecurely to the end of it, and happily ſucceeded. The year following, when ſhe lived at a greater diſtance from me, not being ſufficiently admoniſhed, by the dangers ſhe had eſcaped, againſt the fooliſh cuſtom of putting pins or needles into her mouth, another needle ſlipped into the *œſophagus*, where it was fixed, and could not

removed by art; but in length of time, after cauſing a violent and moſt dangerous inflammation, it made its own way by an *abſceſs* externally, which was ſoon cured. This narrow eſcape effectually cured her inadvertence.*

Wounds in any part of the *ſpinal-marrow*, require no peculiar treatment, though they are always attended with alarming ſymptoms, from its being an appendage of the brain; and the parts that receive nerves from thence will ſuffer a *paralyſis*, and ſometimes mortify; inſtances of both which dreadful conſequences I have ſeen in injuries of this part.†

When the *recurrent* nerves are divided, little is to be feared on that account, more than having the voice or ſpeech affected, in caſe no other material part of the neck has

* See obſervations *ſur les corps éſtranges arrêtes dans l' œſophage, &c. en Mem. de l' Acad. Roy. de Chirurgie par Monſ. Hevin*; and what doctor *Tiſſot* ſays upon this ſubject, in his *Avis au Peuple*.

† Vid. *Comment. Van Swiet. in Aphoris. Boerhaavii*, § 162, concerning the effect of injuries of the *ſpinal* marrow.

has ſuffered; nor do theſe wounds require any particular management.

The tongue is of great uſe, not only in forming and modulating the voice, but in taſting and maſticating our food, and in deglutition;* therefore large tranſverſe wounds of this organ demand particular conſideration and attention. In theſe caſes ſtitching is recommended by ſurgeons in general; but as the tongue is of a very ſoft, looſe texture, the ſucceſs of it is precarious, as well as the operation difficult to perform: however, ſhould it be thought moſt adviſable to attempt it, the tongue, when ſufficiently drawn out of the mouth, muſt be firmly held with

* I have ſeen and examined the mouth of a woman, at *Wickham* in *Suffolk*, who loſt all, but a very ſmall portion of her tongue, when ſhe was a child, by a *phagedænic* ulcer, yet ſhe ſpeaks very articulately, and ſwallows her food without difficulty.——*Riolanus*, in his *Anthropographia* mentions a child of five years old, who loſt his *tongue* in the ſmall-pox, but not the *uvula*, and ſpoke almoſt as diſtinctly as before.——And Monſ. *Juſſieu* has recorded in the *Mem. de l'Acad. Roy. des Sciences*, a wonderful caſe of a girl, who could ſpeak very articulately though ſhe was born without a tongue, and had only a tubercle or ſmall carnous ſubſtance in its room.

a piece of cloth by an aſſiſtant, whilſt the operator paſſes the needle and ligature deep in its ſubſtance, or rather quite through it, making as many ſtitches as he finds neceſſary: after which, it will be proper to hold medicines, almoſt continually, in the mouth, of a ſubaſtringent and vulnerary nature, which alone may be ſufficient to heal ſmall wounds of this part: and indeed *Hildanus* ſays, he cured a girl of a very large tranſverſe wound of the tongue, without ſtitching, by a gargaryſm of this kind, ſweetened with *ſyrup. e roſis ſiccis*; ordering her to hold frequently in her mouth ſome of the ſame ſyrup, or that of *quinces*. The patient ſhould live upon a ſoft liquid diet, not requiring maſtication, and have his body kept duly open with laxatives.*

OF

* See what Monſ. *Pibrac* ſays in his diſſertation upon the abuſe of *ſutures*, in wounds in general, and upon this in particular, in the 3d vol. of the *Memoirs of the Royal Academy of Surgery*.

OF WOUNDS OF THE THORAX, AND ITS CONTENTS.

THE cavity of the *thorax* is circumſcribed by the *ſternum*, the twelve *vertebræ* of the back, the *ribs*, the *clavicles*, the *intercoſtal muſcles*, and the *diaphragm*, which part divides it from the cavity of the *abdomen*, and is ſituated in an oblique direction, conſiderably lower poſteriorly than anteriorly; conſequently the *thorax* is more capacious behind than before: and the whole cavity is lined with the *pleura*, which is a reflected membrane, making two complete bags, in which are contained the two lobes of the lungs, lying in the two lateral cavities of the *thorax*; and theſe two bags, united by *cellular* membrane, form the *mediaſtinum*, which is connected to the *ſternum*, dividing the *thorax* into two parts. There is alſo a poſterior *mediaſtinum*, which adheres to the *ſpine*, where runs the *œſophagus* and *aorta*. Theſe *ſepta* prevent a communication of fluids between the cavities. The *thorax* contains the lungs,

lungs, the heart in its bag called *pericardium*, part of the *œſophagus* and *trachea*, and the *thoracic duct*, or canal running from the *receptaculum chyli*, as will be deſcribed.*

Wounds of the *thorax* may properly be divided into three ſorts. 1. Thoſe of the teguments and muſcles, or containing parts. 2. Thoſe which penetrate the cavity without hurting its contents. 3. Thoſe in which the contained parts alſo ſuffer; of all which we ſhall treat in order.

The wounds of the firſt claſs are known by inſpection, by ſearching with the finger, probe, or bougie, by obſerving no air diſcharged from them, by the immediate return of a proper injection; as barley-water and honey, or ſome ſuch ſoft inoffenſive liquor: and ſhould the wound penetrate, what remains of the injection in the cavity, may be abſorbed by the bibulous veſſels, opening upon the ſurface of the parts, without doing any injury.

In

* The *receptaculum chyli* and *ductus thoracicus* were diſcovered by *Pecquet*, and by him demonſtrated at *Paris* in 1651 or 1652.

In all theſe trials, in order to diſcover the penetration of the wound, we muſt not forget, to place the patient in the ſame poſture he was, when he received it; for otherwiſe, a piece of *cellular* membrane, or other ſubſtance, may fall in the way, obſtruct the paſſage, and fruſtrate our examination.

We have not much reaſon to fear a diſappointment, in the cure of inciſed wounds upon the teguments, &c. of this part; though the continual and neceſſary motion of the *thorax*, in reſpiration, may a little retard the cure; and on account of this motion, ſtitching a wound on this part is not adviſable; as the ſtitches might ſoon break out, leaving the wound in a worſe condition, as we have remarked before; but the *dry-ſuture*, or ſtrips of common plaſter, properly applied, may be of uſe, by preventing in ſome meaſure, a receſſion of the lips of the wound.

In caſe a wound is made by an oblique thruſt of a weapon, and penetrates deep, without entering the cavity of the *thorax*, we are by no means to obſtruct the egreſs of the matter, by cramming into the orifice tents

tents or hard doſſils; but on the contrary, we are to promote it, by removing all impediments, by enlarging the aperture, if it is too ſmall, and by endeavouring to gain a depending opening; but when this important point cannot be obtained, we muſt uſe expulſive compreſſes, and an eaſy well adapted bandage, after dreſſing the wound with a ſoft vulnerary balſam, &c. aſſiſting ſuch meaſures all we poſſibly can, by a favourable poſition of the body, that a collection of matter may be prevented; which, when lodged near the *pleura*, may eaſily erode it, and diſcharge itſelf into the cavity, cauſing an *empyema*.

The general rules in the treatment of wounds, are to be obſerved in theſe caſes. *Belloſte* and *Magatus* plainly ſhow the pernicious effects of tents; and have eſtabliſhed a rational practice from experience, in the management of wounds, now univerſally approved: though, in ſome particular circumſtances, a tent may have its uſe, as we ſhall ſhow, eſpecially when made hollow.*

In

* Though *Belloſte* has done good ſervice to ſurgery, exploding the uſe of tents in general; yet, in his *Hoſpital-*

In order to diſcover, whether a wound penetrates the cavity of the *thorax*, we are, 1. To conſider the kind of inſtrument, the figure of it, and its direction, when the wound was given, with the poſture the body was then in, comparing the ſize of the external part of the wound with the weapon, how far it is bloody, &c. 2. We are to ſearch with the finger, probe, or bougie, as has been directed; remembering to place the patient in the poſition he was, when he received the wound; otherwiſe the obſtacles before mentioned, or a change of ſituation of the muſcles, may obſtruct the introduction of any inſtrument uſed in the exploration of the wound, and not admit the entrance of the injection. 3. We are to obſerve, whether air comes out of the orifice forcibly enough to move the flame of a candle held to it, upon the patient's inſpiring as much as he is able, and making as ſtrong an effort in expiration. This experiment indiſputably proves

Hoſpital-Surgeon, he ſeems to have run into the other extreme, in the ſuperficial dreſſing of *abſceſſes* at the firſt opening.

proves the penetration of the wound, ſhould the flame of the candle be moved, under which circumſtance, the air will ſometimes move through the aperture, cauſing a noiſe in the cavity, and more ſo, when the lungs are wounded in an adheſion of them to the *pleura*; in which caſe, an injection would excite a cough, and might be conveyed by the *trachea* into the mouth. When the air is obſtructed, and cannot find a paſſage out, it may inſinuate itſelf into the *cellular* membrane, puffing that up to a great degree; though this *emphyſematous* ſwelling is more likely to proceed from an internal wound by a fractured rib; of which there are ſeveral inſtances upon record; but none ſo very extraordinary as that related by doctor *Hunter*, which he favoured me with a narrative of, before it was publiſhed; and under his direction the patient was ſaved, by inciſions in various parts, bandage, &c. as appears in the 2d vol. of the *London Medical Obſervations and Inquiries*; which aſtoniſhing caſe ſhould by all means be attentively read.

When we have aſcertained the penetration of the wound into the cavity of the *thorax*, there

there is reaſon to fear the contents of it may be injured; therefore at firſt, the *prognoſis* muſt be doubtful; but ſhould no ſymptoms appear of any of the contained parts being wounded, or blood or air contained in the cavity, we are to treat the wound according to the general rules, but dreſſing ſeldomer than common is adviſable in this caſe.—— When we have any indication, that air has entered the cavity through the wound, we muſt firſt attempt the expulſion of it; for a ſmall quantity, by rarefaction, may compreſs the lungs, and obſtruct their expanſion; cauſing great difficulty in reſpiration, and interruption to the circulation of the blood, which ſymptoms may deceive us in our judgment, without particular attention, and make us apprehenſive there is blood to be evacuated; and conclude, from this conſideration, that it is proper to keep the wound open; as *Muys* ingenuouſly confeſſes he did, and kept his patient ſome weeks under his care, when he might have cured him in a few days, had he been well acquainted with the

cauſe

cauſe of the ſymptoms.*——The method recommended for expelling the air out of the *thorax* is, to make the patient inſpire, as much as he poſſibly can, keeping the wound cloſe covered; then to uncover it immediately after this full inſpiration, deſiring him inſtantly to make a powerful effort, as in expulſion of the *fæces*. By this means, the included air may be driven out of the orifice, unleſs change of poſition of a muſcle, or ſome other obſtacle ſhuts up the paſſage. This proceſs is to be repeated, as often as ſhall be found neceſſary, to clear the cavity of the air that had found admiſſion through the wound; whence the propriety of dreſſing but ſeldom, and other requiſite precautions, to exclude the air at the time of dreſſing, in a caſe thus circumſtanced, are obvious.——*Boerhaave*, by this method, cured an *Engliſh* gentleman in a ſhort time, under ſuch circumſtances, when his life was deſpaired of.

In

* See a caſe in Vol. III. in ſome meaſure applicable to this purpoſe, where, in a pulmonic diſeaſe, air was contained in the cavity of the *thorax*.

In a penetrating wound, though the *viſcera* of the *thorax* are unhurt, yet veſſels may be divided, and pour blood into the cavity; therefore great attention is to be paid to the reſemblance of ſymptoms, in order to determine the true cauſe from whence they proceed; as the operation, eſſentially neceſſary, when blood is there confined, might prove of fatal conſequence to the patient in the contrary caſe, by the admiſſion of more air.

The principal ſign of blood being contained in the cavity of the *thorax*, is a difficulty of breathing; but the difficulty is leaſt when the patient is in an erect poſture, becauſe then the lungs have moſt ſpace for expanſion: the eaſieſt poſture next to this, is lying on his back: it is very uneaſy for him to lie on the wounded ſide, and he cannot bear to lie on the ſound ſide, the weight of the fluid reſting upon the heart, lungs, and *mediaſtinum*; and if blood is lodged on both ſides, he can lie on neither, but on his back only, with any tolerable eaſe; and in an erect poſture, he is often ſenſible of a weight upon

the *diaphragm*, with ſome fluctuating motion of a fluid.

Reſpiration and the circulation of the blood will be greatly affected by this cauſe, and the extravaſated fluid being agitated and heated, ſoon acquires a ſtate of putrefaction, and may then erode and corrupt the *pleura*, lungs, *mediaſtinum*, *diaphragm*, and *pericardium*, and heart itſelf; therefore we are to endeavour to evacuate it, as ſoon as poſſible, in order to prevent ſuch dreadful conſequences; or what may proceed from an abſorption of ſuch a putrid fluid into the maſs of blood.——We muſt not truſt to medicines alone for the cure, as *Maſſa* propoſes; nor to nature's performing it, as mentioned by others, though many inſtances are to be met with in obſervators to this purpoſe.—Profeſſor *Monro* ſpeaks of a gentleman, who was wounded in a duel, and had the ſymptoms of blood lodged in the *thorax*; which vaniſhed upon the evacuation of a conſiderable quantity of bloody matter with his urine.——*Swammerdam* relates a ſimilar caſe, in which the patient voided blood with his urine, and

was

was cured.—*Fabricius ab Aquapendente* mentions ſuch a caſe, in which the ſurgeons had reſolved upon opening the *thorax*; but at that juncture, the patient voided a large quantity of blood by the urinary paſſages, which diſcharge removed all his complaints. ——*Glandorpius* ſpeaks of ſuch a caſe.—— *Nicolaus Novocomenſis* gives a narrative upon the caſe of his friend, who was cured by a bloody evacuation by ſtool, in a penetrating wound of the *thorax*.

Notwithſtanding the inſtances which ſhow, that nature unaſſiſted ſometimes performs cures by extraordinary ways and means, it is incumbent upon us, to uſe all the rational methods of aſſiſtance, that our art teaches, in theſe threatening caſes, in order to obviate the deſtruction of the vital parts, by the confinement of a putrid fluid; or that which will ſoon become ſo.

When the wound is ſituated in the lower part of the *thorax*, the patient is to be placed in ſuch a poſition, as makes it moſt depending, to facilitate the evacuation of the fluid; and when obſtructed by the lungs, we muſt preſs them back with ſome proper flat inſtru-

ment, by which means, if the blood or matter is thin it will run, or be in a manner pumped out, by the action of the lungs in reſpiration; but if the orifice is ſmall, we muſt enlarge it; and ſhould the blood be coagulated, it will be proper to inject ſome reſolvent liquor, as warm barley-water, or pectoral decoction, with honey, to render it fluid and fit to be evacuated. When it does not paſs off readily by theſe means, ſome authors recommend the uſe of a ſyringe, to abſorb it by ſuction; but this methed is not much to be relied on.——*Dionis*, in his operations of ſurgery, mentions the caſe of one of the duke of *Burgundy's Gendarmes*, who had received a thruſt with a ſword under his right breaſt, to whom he was called ſoon after the accident, and dilated the wound ſufficiently to evacuate the extravaſated blood without introducing any thing into it. He obliged the patient to lie conſtantly upon it till the next day, when he found the cavity of the *thorax* perfectly emptied of the blood, and the *hæmorrhage* ſtopped; after which, the patient was cured by ſuperficial dreſſing,

dreſſing, and returned to do duty in the army.*

I was lately deſired by Mr. *Talbot*, a ſurgeon of character at *Wymondham*, to viſit a boy with him, about thirteen years of age, who, three days before, fell from the top of a barn, upon a ſharp plough-coulter, which made an oblique wound, cutting through ſome of the ribs; beginning near the *axilla*, and ending at the bottom of the *ſternum*, juſt above the inſertion of the *diaphragm*. By this horrible wound the left cavity of the *thorax* was wholly expoſed to view, ſhowing that lobe of the lungs, the *diaphragm*, and the heart in the *pericardium*, all in motion. I viſited him a ſecond time, ſeven days after, and again viewed theſe parts with aſtoniſhment, conſidering all the circumſtances: now the whole lobe of the lungs appeared in a mortified ſtate, without any air entering it, at leaſt we could not diſcover any degree of inflation, and the motion of the heart and

* See *Belloſte* and *Le Dran* concerning penetrating wounds of the *thorax*; and *Lanfranc*, *Guido*, *Paré*, *Fab. ab Aquapendente*, *Horſtius*, and other obſervators.

diaphragm was very languid; but ſtill he lived two days longer, which made twelve after the accident, and then ended a miſerable life, in the moſt agonizing death, having his ſenſes to the laſt moment.

When the wound is in the ſuperior part of the *thorax*, and the blood has fallen upon the *diaphragm*, which may be depreſſed by the weight of it, there is no poſſibility of its being evacuated by the wound. In this caſe it is abſolutely neceſſary, to make an opening at the back part of the *thorax*; allowing the other to cloſe as ſoon as it will. The eligible part for making this inciſion, if we can number the ribs, is between the third and fourth of the falſe ribs, counting from below upwards, and about five inches from the *ſpine*, more or leſs, according to the ſize of the patient; if we went lower, we ſhould be in danger of wounding the *diaphragm*, or the abdominal *viſcera*;* by making the inciſion higher up, there would not be a convenient depending

* *Ruyſch* mentions a caſe, in which a ſurgeon not being acquainted with the ſituation of the *diaphragm*, penetrated the *abdomen* inſtead of the *thorax*, in attempting to perform this operation.

depending opening obtained, for the diſcharge of blood or matter; nearer the *ſpine*, we ſhould cut the *dorſal* muſcles, and run the hazard of wounding the *intercoſtal* arteries; and were the opening farther from it, the patient would be obliged to lie in an uneaſy poſture, to promote the diſcharge of the fluid. If the patient is fat, and the parts *emphyſematous*, or otherwiſe ſwelled ſo that we cannot reckon the ribs, by bending his arm, and placing his hand upon his breaſt, and then meaſuring four inches from the inferior angle of the *ſcapula*, and about five from the *ſpine*, we ſhall come pretty near the place already deſcribed.

Having fixed upon the place, and finding reaſon to think the veſſels have done bleeding, by the ſtrength and equality of the patient's pulſe, and warmth of his extremities, the operation is to be thus performed. Place the patient in a good light, and convenient poſture, which is leaning a little forward, and inclining to the oppoſite ſide; then mark the part preciſely with a pen and ink, and make an inciſion about an inch long, between the ribs, and parallel to them, rather nearer

the lower than the upper rib, to avoid the *intercoſtal* artery, which runs in a groove in the inferior edge of the rib; lay the *intercoſtal* muſcle bare firſt; and then divide it cautiouſly, making a ſmall opening through the *pleura*; and if the lungs do not adhere to it, they will then immediately recede, by the admiſſion of the external air; giving room to enlarge the opening, as much as ſhall be thought neceſſary, without hazard of wounding them: and ſhould they adhere to the *pleura*, they muſt be gently ſeparated with the finger, to give room for the diſcharge of the fluid. The adheſion is ſeldom ſo ſtrong, as not to admit of ſeparation in that manner. Should the lungs happen to be ſlightly wounded in the operation, little danger is to be apprehended, in conſequence of ſuch accident. After the opening is made ſufficiently large, the patient's poſture is to be altered into that, which is moſt favourable for the evacuation of the blood, or other fluid contained; aſſiſting the expulſion of it by the efforts of reſpiration. When this is done, in order to preſerve a free diſcharge, a flat hollow tent, properly made of lead, with ears,

ears, and covered with common plaſter, may be introduced, after dipping it into the balſam mentioned in pag. 139; dreſſing the wound, in other reſpects, according to the general rules, applying eaſy compreſs and bandage; the napkin and *ſcapulary* are commonly uſed in theſe caſes, but a piece of flannel, properly hollowed where it paſſes under the arms, having ſuſpenſory pieces to go over the ſhoulders, is preferable to any other bandage, in all diſorders of the breaſt, as it yields to reſpiration. —— When the quantity of the matter diſcharged is ſmall, and of a good conſiſtence, the tent is to be left out, and the wound dreſſed ſuperficially.*

Bleeding, laxatives, and an exact regimen, are of the utmoſt conſequence to be obſerved in

* *Tulpius* tells us of a perſon, who had a tent ſhut up in his *thorax* ſix weeks, which was then voided by the mouth; and that the patient recovered.——*Hildanus* relates ſuch a caſe, in which the tent was expelled by coughing.——*Fab. ab Aquapendente* gives an inſtance, that proved fatal, by a tent remaining in the *thorax*.——Some ſurgeons diſapprove of all kinds of tents after the operation.——Monſ. *Petit*, inſtead of a tent, recommends a piece of cloth, cut with a kind of tail, to be introduced, after being dipped into ſome vulnerary balſam.

in theſe caſes, after the operation, as well as before; but if the patient has loſt a great quantity of blood, or is of a weak conſtitution, then bleeding muſt be omitted, or uſed with great caution and very ſparingly, leſt we ſink the patient too much by that evacuation. Vulnerary decoctions, ſoft balſamic medicines, &c. may be uſed to advantage on theſe occaſions; a variety of which are to be found in practical writers: and if the patient is diſturbed with a cough, recourſe muſt by all means be had to opiates occaſionally.

We have proceeded to the performance of this operation, upon a ſuppoſition of a quantity of blood extravaſated in the *thorax*, and that the wounded veſſels were cloſed: however, ſhould it prove otherwiſe, we may endeavour to conſolidate them, by mild aſtringent, balſamic injections, repeating bleeding according to the patient's ſtrength, obſerving the preceding rules. Nothing elſe can be attempted to any purpoſe, but much more is to be feared than hoped, under theſe circumſtances.

If a perſon has received a thruſt with a ſword or other weapon, quite through the

thorax,

thorax, in a direction that makes this operation unneceſſary, both orifices at the time of dreſſing muſt not be opened at once; becauſe ſo much air might then enter, as when rarefied by the warmth of the part, might expand and compreſs the lungs, cauſing ſuffocation: hence it is always proper to have the circumambient air made warm, at the time of dreſſing wounds that penetrate the breaſt, as the admiſſion of it in that ſtate, will not produce ſuch effect. For the ſame reaſon, it ſhould be ſo contrived, that the patient may inſpire pure, freſh air in his room, to procure a free expanſion of his lungs, in order to expel that, which may be collected in the cavity. In this point, we muſt conſider the ſeaſon of the year, and the degree of heat or cold, to regulate this important matter, which in general is not enough attended to.

We now come to the laſt ſpecies of wounds of the *thorax*, in which the *viſcera* are injured.—When the lungs are expanded, they poſſeſs the greateſt part of this cavity, conſequently are moſt in the way of being wounded; the ſigns of which are a frothy, florid blood, diſcharged by the wound, and by

by the mouth, attended with coughing.—— When a wound in this part is deep, and any conſiderable veſſel belonging to it opened, we muſt not expect ſucceſs; ſmall wounds of it may be cured, but even ſuch muſt be looked upon as dangerous, and the event very precarious, were it only on account of the penetration of the wound into the breaſt.*

What we have to do in wounds of the lungs, is to keep the veſſels empty by repeated veneſection and revulſion, in order to make the circulation more languid, that leſs blood may be poured out by the divided veſſels; giving them an opportunity of collapſing and uniting; and aſtringent, balſamic, incraſſating, and pectoral medicines, by injection as well as otherwiſe, are recommended. Laxatives by the mouth, or by way of clyſter, to keep the body moderately open, muſt not be omitted. Soft, cooling diet muſt be kept to, avoiding all heating and ſtimulating things.

* Many teſtimonies might be produced of cures in wounds of the lungs, as well as in thoſe only penetrating the *thorax*, from obſervators of the beſt authority; as *Ruyſch*, *Tulpius*, *Fallopius*, *Horſtius*, *Arcæus*, *Schenkius*, *Belloſte*, *&c.*

things. A ſtrict obſervance of the non-naturals, in every reſpect ſhould be enjoined; keeping both body and mind as quiet as poſſible, which attention is of the utmoſt conſequence, when we are endeavouring to ſtop the effuſion of blood, and conſolidate the veſſels. Under theſe circumſtances, the prudent uſe of opiates is of infinite ſervice, eſpecially when the patient is diſturbed with a cough, as generally happens.

Concerning the treatment of the wound in general, what we have already ſaid, in reſpect to penetrating wounds of the *thorax*, is direction ſufficient; and in this caſe, the operation for the *empyema* may oftener be found neceſſary.——Should a part of the lungs protrude, appearing in a livid or mortified ſtate, it is to be cut off. *Roſcius* ſays, in his epiſtle to his friend *Hildanus*, that he ſucceeded thus in ſuch a caſe; but his ſurgery was formidable indeed, the operation being performed with a red hot knife, through an abſurd notion which prevailed in his days, that an *hæmorrhage* would be prevented by it.*

A wound

* Vid. *Hildani Opera, Cent.* 2. *Ob.* 32.—Vid. *Tulpium in Obſervat. Med. lib.* 2. *cap.* 18. *de vulneribus cordis.*

A wound penetrating either ventricle of the heart, the *aorta* or *vena cava*, will produce almoſt the ſame appearance, as a great and impetuous flux of blood; but this flux will be greater, and the blood more florid, when proceeding from the heart or *aorta*, than when it comes from the *vena cava*. Palpitation of the heart, cold ſweats, univerſal paleneſs, &c. are the forerunners of death. All that is to be done under theſe melancholy circumſtances, when the vital powers are near aboliſhed, were a ſurgeon preſent, would be to ſtop the wound cloſe up with ſome ſoft ſubſtance; making ſtrong preſſure upon it, as it may ſometimes be of great conſequence, to prolong the patient's life, though only for a few minutes.

When we have reaſon to believe the wound of the heart is only ſuperficial, the caſe is to be treated, as has been adviſed in wounds penetrating the *thorax*. There are hiſtories of cures in theſe caſes, dangerous as they are, to encourage our perſeverance in all rational means, and hope for a happy event. Upon this occaſion, *Bartholine*, *Schenkius*, *Paré*, *Van Swieten's*

Swieten's Commentaries upon *Boerhaave's* Aphoriſms, the *Miſcellanea curioſa*, &c. may be read.*

What has been ſaid in pag. 104, 5, 6, 7, and 8; and 332, 3, 4, 5, concerning wounds of the *œſophagus*, *trachea*, and *bronchia*, makes it unneceſſary to take any farther notice of them here.

As there is ſuch a cloſe connection between the *thoracic duct* and receptacle of *chyle*, it may give clearer ideas to mention them, and the management of their wounds together, though their reſidence is in different regions. This reſervoir is ſupplied by the lacteals, ariſing out of the villous coat of the inteſtines, after paſſing through the meſenteric *glands*, collecting an additional fluid from thence. It is ſituated at the ſide of the *aorta*, near the ſuperior meſenteric artery, between the laſt *vertebra* of the back and firſt of the loins. The *thoracic duct* or canal, runs from it along the *ſpine*, between the *aorta* and *vena azygos*, as far as the fifth *vertebra* of the back, where it

* *Rodericus a Veiga* relates the ſtory of a deer, which was killed in hunting, in whoſe heart was fixed a piece of an arrow, that appeared to have been there ſome time.

it paſſes behind the *aorta*, aſcending to the left ſubclavian vein, into which it empties the *chyle*. In two ſubjects I have ſeen a double *thoracic duct*, which *luſus naturæ* is worth bearing in mind, as will appear preſently.

The ſigns of a wound in the receptacle or *duct*, are the diſcharge of a grayiſh white fluid, the patient ſhrinking and becoming daily weaker, being deprived of nutrition, though he takes food. Sometimes, after having taken aliment, the diſcharge of this chylous fluid is not only increaſed, but appears whiter.

It is rational practice to preſcribe ſubaſtringent, and balſamic injections, with a view of conſolidating the wound, keeping the patient ſtrictly to a ſoft, nutritive diet, ſo ſparingly as but juſt to ſupport life; and in caſe there ſhould be only a ſmall puncture in the receptacle or *duct*, or only one of the branches of the *duct* wounded, when it happens to be double, this treatment of the patient may ſucceed; otherwiſe wounds in theſe parts muſt be deemed fatal, without reſource.*

The

* *Langelottus in Epiſtola ad Thomam Bartholinum* mentions the caſe of a nobleman to this purpoſe.——Vid. *Boneti Sepulchret.* lib. iv. ſect. 3.

The *diaphragm* is a muſcle of the greateſt importance in reſpiration, as we have obſerved; conſequently, when wounded, that compound motion muſt be rendered difficult and painful, under which circumſtance, the patient endeavours to perform, or facilitate its action, by raiſing the ribs. If we conſider the ſtructure, origin, and inſertion of it, with its neceſſary motion, the reaſon of theſe appearances will be very evident. Beſides the laborious and painful reſpiration, the patient is generally ſubject to a cough, attended with a fever, and often with ſuch ſymptoms, as accompany a *phrenitis*. The *phrenic* nerve is derived from the *cervicals*, whence alſo branches are ſent to the *deltoid* muſcle, and the top of the ſhoulder; which nervous communication will enable us to account for the patient's complaining of pain in thoſe parts, when the *diaphragm* is affected.*——I have ſomewhere read of a *gladiator*, who died laughing,

* See what profeſſor *Monro* ſays in his diſſertation upon the nerves at the end of his *Oſteology*, concerning their communication and ſympathy, in reſpect to the ſymptoms attending injuries of the *diaphragm*, the liver, and other *viſcera* connected with that muſcle.

laughing, in conſequence of a wound in this part.

According to the general opinion of writers, wounds in the tendinous parts of the *diaphragm* always prove mortal; but there are inſtances of thoſe who have recovered of wounds in the fleſhy parts of it.——In theſe caſes, we muſt firſt endeavour to ſtop the flux of blood, if it is to any conſiderable degree, repeating *veneſection* occaſionally, and enjoining a ſtrict regimen, with the obſervance of the rules directed in penetrating wounds of the *thorax*.——In order to promote the agglutination of the wound, mild balſamics may be injected; taking all poſſible care to obtain a depending opening, that the blood, matter, or injection, may have as free and uninterrupted an egreſs as poſſible; and treating the wound, in all other reſpects, according to general directions, uſing embrocations, fomentations, and cataplaſms, &c. as pain and tenſion of the *abdomen*, &c. and the urgency of the ſymptoms may require.

Glandorpius ſays he cured a wound in the carnous part of the *diaphragm*; but could not

not ſucceed, when his patient was wounded in the tendinous part of it.

Hollerius pronounces the latter incurable, but not the former; ſaying, he obſerved in a man, who was executed and diſſected in the phyſic-ſchools, a *cicatrix* in the fleſhy part of the *diaphragm*.

Alexander Benedictus ſpeaks of a ſoldier, that was perfectly cured of ſuch a wound.

It is not poſſible to determine, with preciſion, concerning the event in wounds of the *diaphragm*; therefore we ſhould be cautious in our preſage. Should we heal the wound externally, dreadful conſequences might follow, from ſome of the *abdominal viſcera* inſinuating themſelves even into the *thorax*, through the wound.——*Bonetus* has a collection of ſuch examples; and *Paré* relates the caſe of a captain, who was ſhot through the fleſhy part of the *diaphragm*; and though the wound was apparently healed, yet the patient complained of a diſorder in his ſtomach, and of pain like the colic; eight months after, the pain became more violent, and he died in a ſhort time. His body was opened by *Guillemau*, a man of great emi-

nence, bred under *Paré*, who found part of the *colon* in the *thorax*, which had paſſed the wound of the *diaphragm*.——I once ſaw a body opened, wherein part of the ſtomach had paſſed, through a breach of the *diaphragm*, into the *thorax*; but had no opportunity of knowing the circumſtances of the caſe, during the patient's life.

In a wound of the *mediaſtinum*, the patient complains of pain immediately under the *ſternum*, to which it is attached. In order to judge, whether this part has ſuffered, the depth the weapon entered, and the direction of it, are to be conſidered. This is the leaſt dangerous part to receive a wound in, of any in the *thorax*. Wounds here are to be treated according to the general rules.*

The *pericardium* is a very ſtrong membranous bag, incloſing the heart, and lying looſely over it, connected to it only at its baſe,

* Some authors recommend trepanning the *ſternum* in collections of matter, &c. in the *mediaſtinum*. I think Baron *Haller* mentions a ſingular caſe of this kind in a *Dutch* divine.——See Monſ. *Martiniera's* excellent *Memoire ſur l'Operation du Trepan au Sternum*, in vol. iv. of the *Mem. de l'Acad. Roy. de Chirurgie*.

baſe, and to the great veſſels, that enter it there; it lies in contact with the *diaphragm*, with the flat ſide of the heart upon it, and is cloſely connected with the *mediaſtinum:* however, wounds of the *pericardium*, for obvious reaſons, muſt be deemed much more dangerous, than thoſe of the *mediaſtinum.*——In order to form our judgment, in reſpect to a wound in this part, we are well to conſider its ſituation, the nature of the weapon, by which it was inflicted, with other circumſtances.——It is to be treated according to the rules preſcribed in penetrating wounds of the *thorax*, &c.

Benivenius mentions the caſe of an *abſcefs* formed in the *thorax*, which, upon being opened, diſcovered an eroſion of the *pericardium*, and ſome part of the heart bare; yet the patient recovered.

Cardanus, in *Comment. Aphoris. Hippocratis*, ſays he ſaw ſome portion of the *pericardium* taken away, and the patient cured.

Upon the authority of *Galen*, *Marulus*, the ſon of *Mimographus*, was cured after removing ſome of the putrid *pericardium*, and leaving the heart expoſed to view.——The ſame au-

thor relates a caſe, in which he removed part of a carious *ſternum*, found the *pericardium* in a putrid ſtate, and part of the heart naked. ——Some years ago I cured a perſon, after taking away about three inches of the whole ſubſtance of two ribs; in which caſe, I could plainly diſcover the *pericardium*; and the pulſation of the heart threw the matter out at the opening.

Many writers have taken notice of adheſions of the *pericardium* to the heart.—— Doctor *Hunter* told me, he had obſerved a total adheſion; and that he once found a great collection of purulent matter in the *pericardium* of a child. He gave me an hiſtory of a ſoldier's caſe, who died ſuddenly, as he was walking over *Berwick* bridge; upon opening whoſe body, the *coronary* arteries were found ruptured, and the *pericardium* full of blood.——*Bonetus* relates a caſe, in which the *vena cava* was ruptured, and the *pericardium* filled with blood.*

OF

* Vid. *Bohnium de Thoracis Vulneribus lethalibus.*

OF WOUNDS OF THE ABDOMEN AND ITS CONTENTS.

THE cavity of the *abdomen* is divided from the *thorax* by the *diaphragm*, and lined with the *peritonæum*; which is a reflected membrane, from whence are derived the external coats of the *inteſtines* and *abdominnl viſcera*, as the ſame coats, inveſting the *thoracic viſcera*, are from the *pleura*.

The upper part of the *abdomen* is called *epigaſtrium*; the two lateral cavities, *hypochondria*; about three inches above and below the navel, is termed the *umbilical*, and the loweſt the *hypogaſtric* region, which extends to the *pubes*.

The parts contained in the *abdomen* are, the ſtomach, ſmall and great inteſtines, the *meſentery*, connecting and confining them in their places; the *omentum*, *liver*, *gall-bladder*, *ſpleen*, *receptaculum chyli*, *aorta deſcendens*, *vena cava*, and *pancreas*; and the *kidnies* with the *ureters*, may be looked upon as ſituated

here, though, ſtrictly ſpeaking, they are not contained within the cavity.*

Wounds of the *abdomen* may properly be divided into three kinds, as were thoſe of the *thorax*. 1. Thoſe of the teguments, muſcles, and containing parts, not penetrating the cavity. 2. Thoſe which penetrate the cavity, without wounding the *viſcera*. 3. Thoſe wherein the *viſcera*, or any of the contents of this part, are injured.

The firſt kind is known by the eye, by examination with the finger, probe or bougie; conſidering how the weapon was directed, with the length it entered, and by injections. In all theſe expedients, to diſcover the nature of the wound, we muſt never forget to place the patient, in the ſame poſture he was when it was inflicted, if this can be learned from him, or any perſon preſent. It is more difficult to diſcover a penetrating wound of the *abdomen*, than that of the *thorax*, eſpecially in corpulent people, on account of the great quantity

* See doctor *Stukeley's* beautiful and accurate plate of the human *viſcera*, in his Anatomy of the Elephant, publiſhed with his excellent Lecture upon the *Spleen*, &c. in the year 1723.

quantity of fat upon that part; and the muſcles being more moveable, a ſmall alteration of the poſition of the body may prove a great obſtacle to the introduction of a probe of any kind, and deny the admiſſion of an injection. We ſhould conſider every ſymptom and circumſtance, to direct our judgment in this momentous point; and when we are fully aſſured, that the wound does not penetrate the cavity, we are to treat it according to the general rules laid down in the management of wounds; remembering, if it is a deep inciſed wound, though not quite to the *peritonæum*, that it is of the utmoſt conſequence to endeavour to form a very ſtrong *cicatrix*, to reſiſt the dilatation of that yielding membrane againſt the preſſure of the *viſcera*, and prevent the formation of a *hernia*, in conſequence of ſuch a wound; on which account it is adviſable, by all means, to inſiſt upon the patient's wearing an eaſy compreſs and bandage, for ſome time after the wound is healed.——As deep and large inciſed wounds here are very apt to produce *herniæ*, ſo deep and extenſive punctured wounds, without judicious care and management to obtain ample

ple depending openings, may ſoon degenerate into ſinuous ulcers, hard to cure; of which we may be convinced, by conſidering the ſtructure of theſe parts, with the great quantity of *adipoſe* and *cellular* membrane in them, where compreſſion muſt loſe much of its power and effect, having no ſubjacent bone, to aſſiſt this means of uniting them; which was remarked by *Celſus:* and upon this occaſion, we may conſult *Tulpius*, *La Motte*, and other obſervators.——*Sennertus* relates a ſingular inſtance of the dilatability of the *peritonæum*, occaſioned by a blow, which a pregnant woman received, at the bottom of her body; in conſequence of which, a ſmall tumour appeared ſoon after the accident, but as the *fœtus* grew, and diſtended the *uterus*, both together made their way into the *peritoneal ſac*; out of which, after making inciſion, the *fœtus* was taken alive, in the preſence of the relator.——*Tulpius* gives a narrative of a ventral *hernia* proceeding from a wound, and which, being neglected, cauſed the patient's death, ſix years after the wound was cured.

A

A penetrating wound of the *abdomen* will generally be diſcovered, by the means we have propoſed; but to put the matter beyond all doubt, when the wound is large, there will commonly be a protruſion of the *omentum*, *inteſtines*, or other of the *abdominal viſcera*: and when aliment, chyle, bile, fæces, or urine, is diſcharged, we cannot heſitate a moment in pronouncing the penetration of the wound; and the part injured will be declared, by theſe reſpective evacuations.—— Should the ſymptoms be favourable in a penetrating wound, without extreme pain, tenſion, inflammation, fever, fainting, &c. or any ſuch diſcharge, as mentioned above, we have good reaſon to believe none of the *viſcera* are hurt.* In this caſe, we are firſt to endeavour to expel the air out of the cavity, as was directed in penetrating wounds of the *thorax*, excluding it as much as poſſible during the cure; following the general method directed in the treatment of wounds, by ſtitching or otherwiſe, according to the circumſtances.

* *Wiſeman* and *Muys* teſtify, that people have been pierced through the body, without having the *inteſtines*, or any of the *viſcera*, wounded.

cumſtances. Great practitioners differ in their ſentiments concerning the uſe of *gaſtroraphy*, which will be deſcribed preſently. Some are of opinion, that it is better to omit ſtitching entirely; but there are caſes requiring the practice too evidently, to doubt of its propriety. Whether ſtitching is practiſed or not, the patient muſt be kept wholly confined to his bed, and in ſuch a poſition of his body, that the *viſcera* may not preſs forcibly againſt the wound; yet with ſuch an inclination, as may beſt favour the diſcharge of the matter, dreſſing the wound gently with even pledgets of lint, dipped into ſome warm vulnerary balſam, ſuch as have been mentioned, and a plaſter of *cerat. album*; before the application of which, embrocating the whole *abdomen* well with warm oil may prove very beneficial, in preventing tenſion, &c. The compreſs and bandage ſhould be ſoft and eaſy, and the bandage made with flannel, as directed in the wounds of the *thorax*, is adviſable for the ſame reaſon. It is much better to have it in that manner, and to be fixed by pinning or lacing, on the ſide oppoſite to the wound, than in the form of a roller;

roller; the application of which is more troubleſome, nor can it be made to preſs ſo equably. This kind of bandage is likewiſe preferable after tapping. The repetition of the dreſſing is to be governed by the diſcharge of the wound, and other circumſtances, as the prudent and judicious ſurgeon ſees occaſion. Invariable rules cannot be preſcribed; but when nothing forbids it, ſeldom dreſſing is found moſt conducive to the cure.—— The patient muſt ſubmit to a ſpare, liquid diet, have his body kept open, and looſe blood occaſionally, as fever, inflammation, &c. ſhall indicate; having a proper regard to his conſtitution, and cuſtomary way of living, as was hinted in the general account of the treatment of wounds: and a ſtrict obſervance of all the non-naturals ſhould be attended to, throughout the cure, which are ſtill more eſſentially neceſſary to be regarded, when any of the *viſcera* have received an injury, by being expoſed to the air, or in any other manner.

When the *inteſtines* protrude, and are not injured, they are to be reduced immediately, if poſſible, by gradually and gently preſſing them

them in with our fingers; but when wounded, the *glover's future* muſt be uſed, leaving three or four inches of the ligature out of the wound: and when they have been out, and expoſed to the air for any conſiderable time, it is neceſſary, firſt to foment them with ſome emollient liquor, moderately warm, as milk and water with a little oil, freſh meat broth, &c. but ſhould the orifice be ſmall, and the ſtricture great upon them, by reaſon of their being diſtended with air, &c. ſmall perforations, &c. with an awl, have been adviſed by *Paré*, and others; but I cannot ſpeak to this practice from my own experience.* It may be better to follow *Celſus's* advice, as I have occaſionally done, who ſays. "*Si anguſtius vulnus eſt quam ut inteſtina commode refundantur incidendum eſt, donec ſatis pateat.*"† In order to enlarge the wound, we muſt carefully introduce a very ſmall director,

* Doctor *Law*, of *Glaſgow*, recommended puncturing the *hernia inteſtinalis*, with a view of evacuating the air, and facilitating thereby the reduction of the *inteſtine*; and the late celebrated *Chandos* profeſſor at St. *Andrews*, doctor *Simſon*, approved his method.

† Lib. 7, cap. xvi. *de ventre ictu perforato.*

rector, to avoid injuring the *inteſtines*, and then paſs a ſlender curved knife, with a blunt point, in the groove of the director, firmly held againſt the *peritonæum*, whilſt we are dilating the wound, as far as ſhall be found neceſſary, to admit of their reduction with eaſe: but when there is room gained for the introduction of the finger, that will prove the beſt and ſafeſt guide to paſs the knife upon: other inſtruments have been uſed and invented by ſome ſurgeons; but this ſeems to be the beſt method of dilating the wound. Should the ſtricture be found ſo great and unequal, according to the nature and difference of the wounded parts, as that the director cannot, without violence, be introduced directly into the cavity at once, we muſt do it, by cutting gradually, after having firſt endeavoured to obtain ſome liberty, by drawing the *inteſtine* gently farther out: and ſhould we meet with an inſuperable difficulty in paſſing the director, from the ſtricture at its entrance, we may ſlip a little way under the edge ſome very thin, ſmooth inſtrument made of wood, cutting upon it with the point of a common inciſion knife;

and

and having thus gained ſufficient room for the finger or director, proceed, with the blunt-pointed knife, to finiſh the inciſion; keeping the *inteſtine*, during this operation, as warm as poſſible with a flannel ſtupe. Firſt of all, before we begin the dilatation of the wound, we muſt be mindful to place the patient in a ſuitable poſition, with his hips a little elevated, in order to facilitate the reduction or falling back of the prolapſed body, when the wound is dilated; for the natural tendency downwards of the parts within the *abdomen*, together with the action of the *diaphragm* and other muſcles, may not only much obſtruct the return of the prolapſed body, but throw more *inteſtines* out, when the ſtricture is removed. As ſoon as we have ſufficiently enlarged the wound, we muſt reduce the *inteſtine*, if in a proper condition to be returned into the body, by gradually preſſing it in, as much as we can, in the order it came out; and then ſhake the body in various directions, with a view of ſettling it in its natural ſituation. Monſ. *Arnaud's* precaution is not amiſs, as mentioned by *Garengeot*; which is, to be careful we do not thruſt the

inteſtine

inteſtine between the *muſculus rectus* and its *aponeurotic* ſheath, which does not cloſely adhere to it, inſtead of putting it into the *abdomen*, when the wound is near the *linea alba*, below the navel.

If the *omentum* is fallen out of the wound, remaining in a condition to be returned with ſafety, which may be known by its moiſture, warmth, and degree of redneſs, denoting vitality, it is to be done ſpeedily; but when the *inteſtine* protrudes at the ſame time, it will be proper to reduce it firſt, that it may more readily fall into its true ſituation; beſides it will bear compreſſion better than the *omentum*; which is a ſoft adipoſe ſubſtance, and will be more eaſily returned after the *inteſtine*, without the danger of injuring it. Should it be grown cold, hard, and ill coloured, which change may ſoon happen in a body of ſuch texture and compoſition, when expoſed to the external air and ſtrangulated, the common practice has been, to paſs a ligature about it, and cut off the putrid or mortified part with knife or ſciſſars, about half an inch from the ligature. A better way of performing this operation appears to be, by

paſſing a large needle through the middle of the part, with a double flat ligature, or very narrow tape, tying the ſeparate parts of it oppoſite ways, only moderately tight, leſt they ſhould cut through ſuch a tender ſubſtance, and fruſtrate the intention of ſtopping the *hæmorrhage*, that might probably enſue; leaving a ſufficient length of them out of the wound, when the ſound part of the *omentum* is placed juſt within the lips, ſuffering it there to reſt, and the ligatures to digeſt off, without uſing any force to ſeparate them; at the ſame time, endeavouring to preſerve an opening at the inferior part of the wound, for the evacuation of any fluid, that may collect in the cavity.——*Garengeot*, upon his own authority, as well as that of other eminent ſurgeons, diſapproves the ligature, adviſing exciſion of the altered part of the *omentum*, returning the ſound, as has been directed.——*Foreſtus* gives a hiſtory of a fatal *hæmorrhage*, in conſequence of exciſion.——Theſe conſiderations ſhould make us the more attentive to the ſtate of the part, and appearance of the veſſels in it, in order to determine the propriety or impropriety of the ligature;

ture; for they may retain a circulating power, when the ſoft ſubſtance of the *omentum* is corrupted.*

After the prolapſed body or bodies, ſound or injured, are thus returned, the wound is to be treated, as has been directed in penetrating wounds of the *abdomen* without protruſion of *inteſtine* or *omentum*; and ſhould it be thought adviſable, to lay pledgets gently down to the bottom of the wound, it is a neceſſary precaution, to tie the threads unto them, to prevent their being loſt in the cavity. Under ſome circumſtances, a hollow tent, made with thin ſheet-lead covered with plaſter, may be found uſeful, by allowing a more free and uninterrupted diſcharge of matter, that may collect in the cavity; and I have experienced its uſefulneſs in ſimilar caſes.——Though ſome modern writers abſolutely forbid the uſe of tents in penetrating

* See what *Verdier* and *Pipelet* ſay upon this ſubject, in the 3d vol. of the *Mem. de l'Acad. de Chirurgie*, and *Pouteau*, in his *Melanges de Chirurgie*.

Mr. *Pott*, in his Chirurgical Obſervations, diſapproves of making ligature upon the *omentum*, from ſome unfavourable events, which he aſcribed to that practice.

wounds of the *abdomen*, as well as of the *thorax*, yet this point, from the nature of the circumſtances, muſt be left to the ſurgeon's diſcretion, who will not forget endeavouring to make the wound as much depending as poſſible, by poſition of the body or otherwiſe: and when there is great tenſion, &c. of the *abdomen*, fomentations, embrocations, and cataplaſms, of the emollient and diſcutient kind, may prove very beneficial, and ſhould by no means be omitted.*

OF

* In reſpect to the uſe of tents, ſee a note in *Heiſter*, in the chapter upon *Gaſtroraphy*. And relative to this ſubject, may be read *Petit's* eſſays, *ſur les epanchemens dans le bas ventre, en Mem. de l'Acad. de Chirurg.* tom. 1, 2.

OF GASTRORAPHY.

THE ſuture called *gaſtroraphy*, or ſtitching the belly, which we are about to deſcribe, is in a great meaſure exploded. It is indeed quite uſeleſs in ſmall wounds; but neceſſary in thoſe of large extent in all directions; more particularly when they are inflicted tranſverſely in the inferior part of the *abdomen*, in order to prevent the falling out of the *inteſtines*, &c. which they are very apt to do, by their own gravity and the compreſſive force of the muſcles.

There are two methods of practice in performing *gaſtroraphy*. The one, is no more than the common interrupted ſuture, only it muſt be made with a curved needle of the largeſt ſize, and a flat ligature, or tape, in proportion, taking good hold of the parts, to prevent its breaking out, obſerving, that the *peritonæum* and muſcles correſpond, and that they be pierced with the needle at the ſame diſtance from the edges of the wound: making ſuch a number of ſtitches, as the

length of it requires, and leaving a ſpace of about an inch between ſtitch and ſtitch.

The other method of ſtitching the belly, is called the quilled-ſuture, becauſe quills were formerly uſed in performing this operation; but rolls of plaſter, plaſter rolled round wax-candle, or large pieces of common bougie, are preferable to quills; for they may be better adapted to the parts, and will lie eaſier upon them.

The moſt ſimple and ready way of making this kind of ſuture is, to paſs double ligatures in one needle, in order to include the rolls at one end, and be tied upon them on the oppoſite ſide with bow-knots, which will give an opportunity of ſtraitening, or looſening the ligatures occaſionally, with very little trouble. After paſſing in as many ligatures, as the extent of the wound demands, the lips of it are to be gradually brought together, and kept ſo, by a judicious aſſiſtant, when ſuch a neceſſary perſon can be had; the rolls are then to be carefully adjuſted, that their bearing may be exact, regular, and eaſy, tying the ligatures as above deſcribed.

After

After the performance of this operation, the wound is to be dreſſed with ſome vulnerary balſam, &c. embrocating the whole *abdomen* well with warm *ol. olivar.* and applying compreſs and bandage, as has been directed; placing the patient in a favourable poſture for the diſcharge of blood or matter, that may happen to be lodged in the cavity; avoiding, as much as is conſiſtent with anſwering this neceſſary purpoſe, ſuch a poſition of the body, as muſt put the ſtitches upon the ſtretch at the ſame time; ſtrictly enjoining reſt, as motion is diametrically oppoſite to the preſent intention.*

Authors formerly directed, that a tent made with lint, having a thread tied to it, ſhould be introduced into the inferior part of the wound after ſtitching, though there were no evident ſigns of blood, or other

* When it is thought neceſſary to remove this ſuture, the dry ſuture, or ſtrips of common plaſter, may prove very uſeful, in order to prevent a ſeparation of the *cicatrix*, &c. the ſurgeon not forgetting, for farther ſecurity, to place an eaſy, well adapted compreſs under the bandage, which requires, for obvious reaſons, to be worn for ſome conſiderable time.

fluid, to be evacuated out of the cavity; but the ſuppoſition of ſomething being lodged there, is the only juſtification of the practice; for, as we have obſerved, tents may prove very detrimental by irritation of the ſenſible parts, cauſing pain, inflammation, &c. and protracting the cure; but ſhould a tent be found neceſſary to keep the part open, a hollow one, made as has been deſcribed, or a piece of bougie, is far preferable to a tent made of lint, or other material, that will, by imbibing moiſture, ſwell in the wound, and obſtruct the egreſs of any fluid between dreſſing and dreſſing: and beſides preventing the inconvenience ariſing from the increaſe of ſize of any ſubſtance introduced, the bougie, when dipped into ſome ſoft balſam, will ſlip readily, and reſt in the wound, with little or no uneaſineſs to the patient; but the compoſition uſed in preparing the bougie ſhould have no ſtimulating ingredient in it. We ſhould not forget to ſecure either by a ligature, for fear of its ſlipping into the cavity. Our main buſineſs now is obviouſly to give a free diſcharge to whatever fluid is contained, and to promote digeſtion of the wound;

wound; endeavouring, as much as poſſible, to prevent or remove tenſion, inflammation, fever, &c. The wound itſelf is to be treated as has been directed, and the ſame means uſed, to obviate or remove the ſupervening accidents, as bleeding, laxatives, emollient clyſters, ſtrict regimen of diet, &c. as have been adviſed in penetrating wounds of the *abdomen*. By due attention to theſe general rules, *Albucaſis* ſays, he ſpeedily cured a very large wound, attended with a protruſion of a great portion of the *inteſtines*. And *Galen* ſpeaks of extenſive wounds in the *abdomen* ending as happily, where the *omentum* protruded.

We now come to conſider more particularly wounds of the *viſcera* contained in the *abdomen*, with the treatment of them.—— In our endeavours to diſcover them, we muſt always attentively take under conſideration the direction of the weapon, the length it entered, the natural ſituation of the *viſcera*, the attitude of the body when the wound was given, and obſerve whether the contents of any of theſe *viſcera* are evacuated by the wound. We ſhould alſo pay due attention

to

to the pain, fever, inflammation, ſyncope, &c. remembering that a wound, in any of the *viſcera*, generally occaſions an univerſal tenſion of the *abdomen*.*

The ſtomach is ſituated under the left ſide of the *diaphragm*, juſt below the ſmaller lobe of the liver, paſſing down a little way, and then turning over the *ſpine* to the right ſide; in ſhape much reſembling the pouch of a bag-pipe. It lies in an oblique direction from left to right, and has a ſubſtance called *meſogaſtrion*, in its concave part, between the orifices attaching it to the ſubjacent parts. Its ſuperior orifice, called alſo the *cardiac*, is on the left, and the inferior or *pylorus*, on the right ſide of this organ.

In wounds upon the region of the ſtomach, beſides conſidering the direction of the weapon, and examining the length it penetrated, it is neceſſary to inquire, whether the patient's ſtomach was full or empty, at the time the wound was received. We are then to obſerve, whether he has the ſymptoms, that commonly

* Vid. *Bohnium de Abdominis Vulneribus in Renunciatione Vulnerum.*

commonly attend injuries done to this part, as ſickneſs, vomiting, ſingultus, languor, anxiety. If the weapon has entered the cavity of the ſtomach, dividing the veſſels, blood will be thrown up at the mouth, and probably the aliment will come out at the wound; if not, it muſt fall into the cavity of the *abdomen:* violent pain enſues, the pulſe becomes languid, clammy ſweats ariſe, and the extremities grow cold. Theſe are the general ſymptoms; ſome, if not all, of which accompany wounds of the ſtomach; and in the *diagnoſis*, they have been denominated mortal wounds, or ſuch as are incurable by art: yet, as we have obſerved, there being many ſurpriſing inſtances of ſucceſs in ſuch caſes, we are, after making a proper *prognoſtic*, to endeavour to aſſiſt nature all we poſſibly can.

The method propoſed to aſſiſt nature is, to repeat veneſection as often as the patient's ſtrength will allow, in order to prevent, or remove inflammation; to which membranous parts are very liable, and which may ſoon terminate in a mortification, without the greateſt attention to obviate it. The patient

is

is to be kept to a ſoft diet, taking a very ſmall quantity at a time, to avoid diſtention of the ſtomach, which would diſappoint nature's operation in the cure of the wound: we ſhould therefore endeavour to give ſome ſupport by the frequent repetition of nutritive clyſters, made thin, that they may be the more readily abſorbed, as well as by aliment taken at the mouth, in the cautious manner which has been directed; enjoining a ſtrict obſervance of all the non-naturals, and confining him to his bed, lying upon his back. By paying a due regard to this method, a dangerous *hæmorrhage*, pain, fever, inflammation, &c. may be prevented, or removed, as far as the nature and circumſtances of the caſe will admit; and an opportunity given to the wound of uniting, and the fall of any thing into the cavity of the *abdomen* hindered, which probably would prove of fatal conſequence.*

Should

* The caſe of Mr. *Atkinſon* communicated to the Royal Society on this occaſion, is very pertinent, and worthy of notice.——Alſo there is a letter in Monſ. *Le Dran's* Conſultations worth reading on this occaſion; and what doctor

Should the wound in the ſtomach preſent itſelf to our view, it may be ſtitched as has been directed when the *inteſtines* protrude wounded.——Some ſurgeons have recommended ſtitching the ſtomach to the *peritonæum*.——*Vander Wiel* relates two caſes, ſo treated with ſucceſs: and *Purmannus* aſſures us, he has ſucceeded in this operation. However, when the wound does not offer itſelf to our view, the difficulty and danger of attempting to find it, ſhould diſcourage our ſearch; under which circumſtance, the moſt rational method of treating the patient is that we have delivered: and whether the wound is ſtitched or not, it is to be managed as has been directed in other penetrating wounds of the *abdomen*.

Glandorpius relates a very memorable caſe from *Florianus Matthæſius* of *Brandenburgh*, of a man at *Prague*, who ſwallowed a knife eight or nine inches long, which pointing at the ſuperior part of the ſtomach, he cut upon and extracted, ſeven weeks and two days

doctor *Tiſſot* ſays, in his *Avis au Peuple ſur ſa Santé*, chap. 29. is worthy notice. That is a book of great merit and utility.

days after it was lodged in his ſtomach, and perfectly cured the patient.

Fallopius ſays he cured two perſons of wounds, which penetrated the cavity of the ſtomach, though the aliment paſſed through.

Jacobus Orthæus tells us, that in the city of *Fuldana*, a ſoldier was wounded in the ſtomach; and that immediately upon taking food, it came through the wound: in which caſe, the ſtomach was ſtitched to the edges of the wound of the teguments, and cured by two judicious ſurgeons, who affirmed the fact to *Orthæus*.

In the *Miſcellanea Curioſa*, is an account of a *fiſtula* remaining after a wound in the ſtomach, through which ſome of the aliment paſſed, the perſon living eleven years in that condition.*

The ſmall *inteſtines* are about five times the length of the body, conſiſting of the *duodenum*, *jejunum*, and *ileum*. The firſt is firmly fixed

* *Albucaſis*, *Becherus*, *Viega*, *&c.* mention cures of wounds in the ſtomach, through ſome of which the aliment was diſcharged.——See a caſe to this purpoſe in the third volume, wherein an abſceſs opened ſpontaneouſly, and diſcharged the contents of the ſtomach.

fixed to the ſubjacent parts, by *cellular* membrane, without having any *meſentery* annexed to it: it is continued from the *pylorus*, paſſing under the *colon*, and then reflected over the *ſpine* to the left ſide.——The *jejunum* is a continuation of the *duodenum*, taking its name where the *meſentery* begins; but it cannot be preciſely aſcertained, from any marks external or internal, where it ends, and where the *ileum* begins; however, according to *Winſlow*, about 3-5ths of the whole length of both *jejunum* and *ileum* may be allowed the latter.——The *ileum* enters the ſide of the *cæcum*, which is the firſt of the great *inteſtines*, ſituated on the right, juſt above the *os ileon*, and, from its figure and pendent poſition, excrements, and extraneous bodies, are very apt to ſtop here, producing dreadful conſequences.——The *colon* proceeds from the *cæcum*, and paſſes winding over the *ſpine* to the left ſide, under the ſtomach and ſpleen, and cloſe to the kidney, where it goes over the brim of the *pelvis*, and turns into it; which turn is called the inferior ſigmoid flexure.——The *rectum* begins where the *colon* ends, and terminates at the *anus*.——Having given this

curſory

curſory view of the inteſtinal canal, the nature and treatment of the wounds in the different parts of it, may be better underſtood.*

When the ſmall *inteſtines* are wounded, the digeſted aliment is commonly diſcharged at the aperture, and *chyle* with it, when the *lacteals* are divided; and ſhould the wound be in the *duodenum* near the ſtomach, *bile* may be mixed with the other fluids; the *biliary duct* may alſo then be opened, as it thereabouts enters that *inteſtine*. In the *duodenum* the excrements are thin, yellow, and frothy, and not fetid; in the *jejunum*, of a whitiſh or

* Mr. *Clover*, of the city of *Norwich*, a man of the greateſt ſkill in the diſeaſes of horſes, and of equal veracity, ſhowed me a ſtone weighing eleven pounds, which he took out of the *colon* of an old horſe, that did his work well to the laſt, and died in good caſe. Upon ſawing the ſtone in the middle, it did not appear of the ſame ſolidity in every part; it was formed upon a ſmall fragment of a flint ſtone, which we found in the very centre. ——This ſingular caſe brings to my mind, that of the *tabular* ſtone, which was found in the *aorta* near the heart of a great perſonage, as mentioned by *Piſo* in his 101ſt obſervation.——Stony concretions have been found in various parts of the body, but more particularly in the *glandular:* I once obſerved them in the centre of the *glands*, after taking off a cancerous breaſt.

or aſh colour; and in the *ileon*, viſcid with *mucus*. Theſe remarks may be of ſome uſe, to direct the judgment in reſpect to the part wounded.

The prognoſtic in theſe wounds is unfavourable, as we have demonſtrated; and they are claſſed among thoſe of a mortal nature, with ſome exceptions, by the moſt eminent writers, as we have ſhown. When the *inteſtine* does, or does not protrude in ſuch wounds, they are to be treated as thoſe of the ſtomach. When a wound of the *inteſtine* comes not in view, we ſhould not ſearch after it, but rather endeavour to avoid expoſing the part to the air, by which the danger might be increaſed; as is exemplified in *Tulpius*, who blames a ſurgeon for ſearching too far, in order to diſcover the extremities of a gangrened *inteſtine*.——*Varicola* tells us of a young man, who ſhot himſelf into the *abdomen*, and a few days after voided the bullet by ſtool, and was cured without any bad accidents ſupervening.——*Hildanus* gives us the hiſtory of a perſon, who was wounded with a ſword in the *abdomen*, the point of which breaking upon the thruſt, re-

mained in his belly for a year, and was then expelled with his *fæces*. —— Monſ. *Littre* mentions a perſon, who received ſeveral wounds in the *inteſtines*, and yet recovered. ——*Bohnius* cites many authors, ſhowing us, that nature does more than art, and effects cures in many inſtances, beyond our conception: but if wounds of the teguments and inteſtines are large, it may be found very neceſſary to perform the glover's ſuture upon the one, and *gaſtroraphy* upon the other, as has been deſcribed. The glover's ſuture is to be made ſpirally, with a fine triangular-pointed needle, paſſing it at ſmall diſtances, and with all poſſible exactneſs, leaving ſome inches of the ligature out of the wound.

When the large *inteſtines* are wounded, preſenting themſelves in that condition, they require ſtitching, and are to be treated, in all reſpects, as wounds of the ſmall *inteſtines*; only, when they are wounded, and do not protrude, ſo as to admit of ſtitching, we muſt be very cautious in the injection of clyſters, unleſs the wound be out of their reach, as the liquor may eſcape into the cavity of the *abdomen*, and produce much miſchief. The

cæcum

cæcum is a bad part of the inteſtinal canal to receive a wound in; as from its pendulous ſituation, whatever happens to be contained in it in conſequence of ſuch an accident, or any indurated *fæces*, have to riſe againſt their own gravity by the periſtaltic motion. ——Upon opening the duke of *Berwick's* body, it is ſaid a ball, was found lodged in this part.

In a total diviſion of the ſmall *inteſtines*, in the ſuperior parts near the ſtomach, the event muſt prove fatal, unleſs both ends can be ſtitched together, by which there is ſome chance of ſaving the patient; however, ſhould there be no poſſibility of bringing the lower extremity of the *inteſtine* to the other, which is apt to fall down into the cavity, all that can be attempted, in this caſe, is to ſtitch the ſuperior part to the edges of the external wound; which operation is related to have been done with ſucceſs, in the *Acta Eruditorum Lipſiæ*, when there was length enough of *inteſtine* from the ſtomach, furniſhed with *lacteals*, for the abſorption of *chyle*, neceſſary for nutrition of the body.—— Monſ. *Littre* ſpeaks of ſeveral ſuch caſes, and

Monſ. *Mery* of one, in which artificial *ani* were made by this method.——I have ſeen one that remained at the navel, in conſequence of an *exomphalos*, the patient living many years after; and once I had in view the making one in the *inguen*, on account of a mortification, which attended a *hernia* there, as related in the ſecond volume of this work; but nature, aſſiſted by art, perfected a cure beyond expectation. From what I obſerved in this caſe, and ſome others, it appears to me very rational practice, when we are called, and find the parts in that ſtate, which does not admit of the operation for the *bubonocele*, to open the tumour directly, in order to remove the ſtricture, and then treat the diſeaſe as a mortification in any other part.——The caſe related by Mr. *Jamieſon*, in the 1ſt vol. of the *Med. Eſſ.* alſo encourages this practice, and demands particular attention.*

The *meſentery* is a duplicature of the *peritonæum*, connected by *cellular* membrane, expanding

* *Hollerius*, *Paré*, *Jacotius*, *Glandorpius*, *&c.* furniſh us with many inſtances of cures in wounds of the *inteſtines*.

panding and receiving the guts as in a ſling. It begins looſely upon the loins, extending to all the *inteſtines*, except the *duodenum*; but that part of it, which belongs to the great guts, is called *meſocolon*. It prevents the *inteſtines* from twiſting, and keeps them in their proper places; it ſuſtains the arteries, veins, lympheducts, and nerves, in their paſſage to and from the *inteſtines*, as has been obſerved; therefore wounds in this part may be attended with great *hæmorrhages*, and other dangerous ſymptoms. They are to be treated, as has been directed in penetrating wounds of the *abdomen*.

The *omentum* is attached, at the anterior part, to the arch of the *colon*; poſteriorly, to the ſtomach; and laterally, to the *ſpleen*, *duodenum*, &c. It is an exceedingly fine membrane, floating upon the *inteſtines*, larded with fat, and reſembling an apron, with beautiful branches of veſſels like net-work.

When the *omentum* is wounded, and part of it prolapſed, appearing moiſt, warm, and reddiſh, ſhowing that the circulation of the blood is not ſtopped in it, beyond a probability of being again put in motion by the

warmth of the body, it is to be returned again into the *abdomen*; but what we have ſaid, upon its prolapſion with the *inteſtines*, makes it unneceſſary to add any thing more here concerning wounds of this part.*

The liver is a large irregular body, of a tender texture, vaſcular, and glandular. It is ſituated under the arch of the *diaphragm*, lying in contact with it, in the right *hypochondrium*, extending to the left. Its ſuperior ſide is convex; its inferior concave. It derives its external covering from the *peritonæum*, whence proceed, on its convex ſide, three ligaments, attaching it to the *diaphragm*.

The ſigns accompanying a wound in the *liver* are, a great effuſion of blood, tinctured with *bile*, when it penetrates far into its ſubſtance; the patient complains of ſickneſs and

* *Glandorpius* has a very memorable caſe of a wound in this part, received by a nobleman in a duel. *Specul. Chirurg.*——*Galen, de uſu partium*, ſays, the uſe of it is to keep the ſubjacent *viſcera* warm; and he inſtances the caſe of a gladiator, who, having loſt a great part of it, was ever after obliged to wear ſomething to keep the *abdomen* warm.

and anxiety; ſometimes vomits blood, ſometimes bile, and ſometimes diſcharges blood by ſtool; the *abdomen* grows tenſe and painful, and the pain frequently extends quite to the neck, inflammation and fever ſucceed; and when cold, clammy ſweats come on, attended with *ſyncope*, and coldneſs of the extremities, they are to be conſidered as the harbingers of death.

After having conſidered the nature and ſituation of the wound in this bowel, all that art can do to aſſiſt nature in the cure, is, by endeavouring to ſtop the *hæmorrhage*; bleeding repeatedly as the patient's ſtrength will bear; keeping his body open, by the moſt lenient purgatives, or clyſters, enjoining the ſtricteſt regimen, reſt, &c. treating the wound according to the general rules obſerved in penetrating wounds of the *abdomen* with an effuſion of blood, and making ſuch applications to the whole *abdomen*, as the pain and tenſion ſhall require, and as already have been directed: but deep wounds in this part muſt determine us to preſage an unhappy event, though there are upon record inſtances, well authenticated, of ſome cures

having been performed.—*Glandorpius* ſays, he cured a youth of a large wound in the liver. ——*Scultetus* relates ſuch a cure.——*Hildanus* mentions a caſe, that ended happily, though the ſymptoms were very ſevere, where a piece of the liver was found at the mouth of the wound, ſeparated by a ſword.——But the moſt memorable example of all, is that recorded in the *Mem. de l'Acad. Roy. des Sciences*, for the year 1705, if I do not miſtake the year, of a lunatic, who inflicted eighteen wounds upon himſelf, eight of which penetrated the cavity of the *abdomen*; the *liver*, the *colon*, and the *jejunum* ſuffering; yet, by frequent bleeding, a ſtrict regimen, dreſſing ſeldom, &c. he was cured of the wounds, and recovered his ſenſes; but relapſing about a year and half after, he laid violent hands upon himſelf, which gave the opportunity of knowing what parts were wounded, by opening the body.

The *gall-bladder* is of a pyriform figure, and ſituated on the inferior ſide of the great lobe of the liver, and its duct opens into the *duodenum*. Should it happen to be full of bile when wounded, ſome of that fluid may be

be evacuated externally by the aperture, leaving no room to doubt, what part has been injured, eſpecially when but little blood is diſcharged with it; though it is more likely it ſhould fall into the *abdomen*, where, as it is the moſt acrimonious fluid in the body, it may ſoon occaſion very ſevere ſymptoms; and for want of its being thrown into the *inteſtines* to ſtimulate them to an excretion of their contents, a fatal conſtipation may prove the conſequence of that defect.

The treatment of the wound itſelf, and of the patient, in all other reſpects, differs very little from what has juſt been mentioned concerning wounds of the *liver*; but unleſs we can make a depending opening into the *abdomen*, for the evacuation of this acrid liquor, we have reaſon to apprehend, all our endeavours will be in vain.——The diſſertations of Monſ. *Petit*, relative to this matter, and other extravaſations in the *abdomen*, in the 1ſt and 2d volumes of the *Memoirs of the Royal Academy of Surgery*, deſerve to be read with particular conſideration and attention, to direct our judgment and aſſiſt our practice.

The

The following fatal, and very pertinent, caſe, was communicated to our Royal Society. An officer received a wound in the inferior part of the *gall-bladder*, without the adjacent parts ſuffering any conſiderable injury; but the conſequent ſymptoms were very ſurpriſing; the *abdomen* was immediately diſtended, as if the patient had been afflicted with an *aſcites* or *tympanites*, which inflation continued till his death, about a week after he received the wound. He had no eructations, or *borborygmi*, and his bowels remained obſtinately conſtipated all the while he lived, purges and clyſters having no effect; and though conſiderable doſes of opiates were given, they procured little or no eaſe. The external appearance of the wound was pale, crude, and flaccid; on the fifth day he complained of a *nauſea*, and had a ſlight hiccup; his pulſe was ſtrong, equal, and ſlow, till the day before he died, then intermitted a little, but his ſenſes were perfect even till death cloſed the miſerable ſcene.*

The

* See a caſe in the 2d volume, in which ſixty-eight biliary concretions were diſcharged at an abſceſs, formed juſt

The *ſpleen* is an oblong, flat body, of a livid colour; its ſubſtance is ſoft, and texture very looſe; it lies in the left *hypochondrium*, in contact, on its ſuperior ſide, which is convex, with the *diaphragm*, and its inferior ſide reſts upon the ſtomach, colon, and kidney.

There is no material difference in the conſequences of a wound in this organ and of one in the *liver*. It is not quite ſo dangerous in its nature, but requires to be treated in the ſame manner, in general, as a wound in the *liver*.

It is unneceſſary to add any thing here concerning wounds of the *aorta*, *vena cava*, and other large blood-veſſels belonging to this region, after what has been ſaid in pag. 102, 366.

The *pancreas*, is a long flat conglomerate gland, ſituated behind the ſtomach, lying acroſs the *ſpine*, between the *liver* and the *ſpleen*; its excretory *duct* opens into the *duodenum*,

juſt beneath the falſe ribs. This patient enjoyed good health many years after, keeping the fiſtulous ulcer open with a *canula*.

duodenum, with the *ductus communis choledochus*.*

We have no criterion to inform us, with certainty, when this part is wounded; our judgment can only be conjectural, founded upon general rules, as an obſervance of the direction of the weapon, &c. but a wound by which the *duct* of this gland is opened, muſt be deemed very dangerous; becauſe the fluid that ſhould paſs through, and be diſcharged into the *duodenum*, will fall into the cavity of the *abdomen*. Wounds in this part require only the general treatment.

In wounds in any part of the *abdomen*, or its contents, as well as in the *thorax*, &c. if a cough attends the patient, it demands particular notice, and muſt be removed, or alleviated all we poſſibly can, by pectoral and balſamic remedies, with the aſſiſtance of opiates, as the urgency of the ſymptom requires; becauſe the action of coughing oppoſes every intention of cure.

The

* Vid. *Regnerum de Graaf de Succo Pancreatico*, with a beautiful figure of the *pancreas*, and its *duct* opening into the *duodenum*.

The kidnies are glandular organs, appointed to ſeparate the aqueous with the ſaline parts, from the blood, and are ſituated, as has been obſerved, in the lateral cavities of the *abdomen*, the right, under the great lobe of the *liver*, and the left, under the *ſpleen*; the right, from being preſſed upon the *liver*, is a little lower in its ſituation than the left; at their ſuperior extremities, they are in contact with the *diaphragm*, and reſt againſt the laſt ribs, and at their inferior, againſt the *oſſa ilium*, lying upon the tranſverſe proceſſes of the *vertebræ lumborum*, ſurrounded with a great quantity of adipoſe membrane, which makes ſoft beds for them to lie in: they are oblong flat bodies, four or five inches long, and two or three broad, having their convexity towards the *ſpine*; and their ſubſtance is pretty ſolid.

Wounds of the kidnies are to be diſcovered, by conſidering their ſituation, and the general directions mentioned, relating to the exploration of wounds in the *viſcera* of the *abdomen*. They are attended with pain and tenſion of this region, ſometimes extending farther, and if the inſtrument, by which the wound,

wound was inflicted, penetrated the *pelvis* of the kidney, urine will be evacuated by the wound, and blood mixed with it, through the *urethra.* Theſe muſt be looked upon as dangerous wounds, but not ſo dangerous as thoſe of the other *abdominal viſcera*; though, as we have obſerved, ſtrictly ſpeaking, they lie out of the limits of the *abdomen.* They are to be treated as wounds of thoſe parts, with the obſervance of general rules; and when the wound does enter into the *pelvis* of the kidney, natural balſams, as *balſ. e copaib.* &c. may be beneficially taken, drinking *aq. calcis*, after the pain, inflammation, and tenſion are off.——Three or four years ago, I was called, by an apothecary, to an elderly gentlewoman, who had long voided purulent matter with her urine, and found a very large abſceſs upon the region of the kidney, which had a communication with its *pelvis*; for, upon opening it, urine was diſcharged with the *pus.* Since this, ſhe has enjoyed better health, than for many years before, and the only inconvenience remaining, is a ſmall diſcharge of matter externally, requiring no dreſſing but a piece of common plaſter.——

ter.——*Fallopius*, *Dodonæus*, &c. relate hiſtories of cures in wounds of the kidnies.—— Serjeant *Bernard's* narrative of conſul *Hobſon's* caſe, in the *Philoſ. Tranſ.* is well worth reading on this occaſion.* The celebrated profeſſor *Marchetti*, of *Padua*, performed the operation of *nephrotomy*, with ſucceſs, upon this gentleman, when he was conſul at *Venice*.†

The *ureters* are ſlender canals, running from the kidnies to the bladder, at the back of the *peritonæum*, without entering it; and after paſſing over the *muſc. pſoæ* in an oblique direction, they turn down into the *pelvis*, continuing their courſe between the *rectum* and the bladder; the *umbilical* arteries on one ſide, and the *vaſa deferentia* on the other, penetrating the bladder on each ſide the *veſiculæ ſeminales*, making a triangle with the

* See *Lowthorp's* Abridgement, Ed. 3. vol. 3. pag. 188 *& ſeq.*

† See *Les cas ou Néphrotomie ſe fait avec ſucces par Monſ. Lafitte, en Mem. de l'Acad. Roy. des Chirurgie*, tom. 2. *Et Recherches hiſtoriques et critiques ſur la Néphrotomie, ou Taille du Rein*, tom. 3. *par Monſ. Hevin:* and *Melanges de Chirurgie, par Monſ. Pouteau.*

the *meatus urinarius*, commonly at the diſtance of about an inch.

Wounds of the *ureters* are known by their ſituation, the direction of the inſtrument, &c. but it is difficult to diſcover them, and determine this point with preciſion; and it is ſcarce poſſible they ſhould be wounded, without injuring ſome other parts of conſequence. Theſe wounds are more dangerous, than even thoſe of the kidnies themſelves; for the urine muſt fall into the *pelvis*, if not into the *abdomen*, and produce fatal ſymptoms in a ſhort time, unleſs ſome way ſhould be pointed out to evacuate it. In theſe caſes we ſhould allow the patient to drink but a ſmall quantity of liquor, and that of the ſofteſt and moſt balſamic kind, void of any ſtimulating property, managing the wound in the ſame manner as wounds of the kidnies.

Though the following notes have no immediate connection with the ſubject, yet their ſingularity may render them acceptable.

In opening the body of a gentleman lately, aged about thirty, who died hectical ſome years after it was ſuppoſed he had been afflicted with true nephritic ſymptoms, and

and voiding a large quantity of pure blood by the urinary paſſages, I found one of the *ureters* as impervious as a ligament, and much enlarged for a conſiderable ſpace from the kidney, with purulent matter, bnt no calculous ſubſtance, in its *pelvis* or in the bladder.——About the ſame time I attended the opening the body of another gentleman, who died of a *diabetes*, and had long been affected with violent hypochondriac complaints. Nothing was found obſervable in this body, but an incyſted aqueous tumour ſituated upon the ſuperior part of the left kidney, where the arteries, ramified upon the cyſt, were oſſified, ſhowing a gradation of the oſſification from a cartilaginous to a perfect boney hardneſs, which upon bending, broke in ſome places and pierced the coats of thoſe veſſels.——I alſo once ſaw oſſifications upon the ſurface of a *placenta uterina*.——See Vol. II.

OF WOUNDS OF THE PARTS CONTAINED IN THE PELVIS.

THE boundaries of the *pelvis*, which contains the *bladder*, *rectum*, and *uterus* with its appendages are, forward the *os pubis*, backward the *os ſacrum* above, the *os coccygis* below; laterally the *ilia* above and the *iſchia* below. The *bladder* lies in the lower anterior part of the *pelvis*, upon the inſide of the *ſymphyſis* of the *os pubis*; it is divided into neck, body, and *fundus*, the latter of which is attached to the *peritonæum* by a ligament. When the *bladder* has but little urine in it, its *fundus* falls below the *ſymphyſis* of the *os pubis*; but when diſtended with urine, if it is not become rigid and unyielding, it riſes conſiderably above it. Its upper part is covered with the *peritonæum*, whence it is reflected, and expanded over the anterior part of the *rectum*; which expanſion is formed into a kind of pouch, receiving part of the ſmall *inteſtines*.

Wounds

Wounds of the *bladder* are diſcovered, by conſidering the ſituation of the part, the direction of the weapon, and the depth it entered; and when it penetrates, urine is generally evacuated through the wound, which circumſtance removes all doubt; and a wound here is almoſt always attended with pain in the region of the *pubes* and groins. It is more or leſs dangerous, according to the part of the *bladder* that is wounded; if it is in the *fundus*, towards the poſterior part of it, or in any other, where the urine, in conſequence of the wound, muſt neceſſarily fall into the cavity of the *abdomen*, it will inevitably prove mortal; as frequently happened in performing the high operation for the ſtone; on which account it was juſtly exploded, and certainly will not be practiſed again, except under particular circumſtances. When the urine paſſes freely out of the *bladder*, and does not fall into the *abdomen*, we want not inſtances from *lithotomy* to evince, that wounds of this part are curable by the common treatment: and ſome ſurgeons, when the wound is at the *fundus* of the *bladder*, adviſe ſtitching the lips of the

wound and bladder together; as has been directed in wounds of the ſtomach and *inteſtines*, in order to prevent the falling of the urine into the *abdomen*.——Profeſſor *Monro* ſays, that a ſoldier at *Sterling* was ſhot into his bladder, and the wound ſoon healed.——And Monſ. *Petit* relates the caſe of an officer, that received a ſhot in this part, who ſeventeen years after was cut for the ſtone, and had the ball extracted, caſed over with calculous matter.*

Before mentioning wounds of the *rectum*, we may conſider thoſe of the *uterus*; firſt curſorily taking notice of the ſituation and connexion of that body, and its appendages, in reſpect to the adjacent parts. After removing the contents of the *abdomen*, thoſe of the *pelvis* appear, and we have in one view, the *colon* from the inferior ſigmoid flexure, the *rectum*, and the *bladder*, the *uterus* lying between the two latter, with its appurtenances; as the *ligamenta lata*, which are only doublings of the *peritonæum*, through which

* See what *Riverius*, *Glandorpius*, *Felix Wurtz*, *Caſparus Bauhinus*, *&c.* ſay upon this ſubject.

which the veſſels paſs to the *uterus*; the *ligamenta rotunda*, that run along in a ſerpentine courſe, upon the upper edge of the *ligamenta lata*, from the anterior corners of the *fundus uteri*, through the rings or ſheaths of the *muſcul. obliq. extern.* and are then loſt in the cellular membrane of the groins; the *tubæ fallopianæ*, which ariſe from the corners of the *fundus uteri*, and are connected to the *ligamenta lata*; the *morſus diaboli*, a jagged body, ridiculouſly ſo called, reſembling a fringe, at each extremity of thoſe tubes; and the *ovaria* towards the back part of the *uterus*. The *vagina uteri* is of a ſpongy texture, having many *glands*, whoſe excretory *ducts*, called *lacunæ*, open into the whole extent of its internal ſurface; it is placed between the *rectum* and *meatus urinarius*, and connected to them, by the univerſal connecting ſubſtance, the cellular membrane, all which paſſages have a degree of obliquity in their direction. The *uterus* begins at the *os tincæ*, where the *vagina* ends; it is ſituated at the bottom of the *pelvis*, between the *rectum* and the *bladder*, as has been obſerved; and theſe parts are ſtrongly connected toge-

ther, though left much at liberty, to allow of the neceſſary dilatation and contraction of each reſpectively, by the interpoſition of the *peritonæum*, which paſſes over them, from the one to the other, giving them their external covering.*

From the analogy of the ſymptoms, it is pretty hard to diſtinguiſh wounds of the *uterus* itſelf, from thoſe of its appendages, in an unimpregnated ſtate, as has been remarked; but, even in this caſe, ſhould the weapon penetrate the cavity of the *uterus*, ſome appearance of blood may be diſcovered through the *vagina*, ſufficient to direct our judgment with preciſion. When it is diſtended with the *fœtus*, wounds may be attended with ſuch an effuſion of blood, that nothing can ſave the patient but a ſpeedy extraction of it; under which circumſtance, the *cæſarian* operation is adviſable, if it cannot be effected in any other manner; for after delivery, the *uterus*

* Vid. *Regnerum de Graaf de Mulierum Organis Generationi inſervientibus: et Noortwyk de Utero humano gravido.* ——Vid. etiam *Anatomiam Uteri humani gravidi, celeberrimi Doctoris Hunteri Profeſſoris Anatomiæ in Academia regali Londinenſi, Figuris illuſtratam.*

uterus ſoon contracts, the divided veſſels collapſe, and the *hæmorrhage* ſtops. Theſe wounds are to be looked upon of a very dangerous nature, and are to be treated according to general rules, like thoſe of the *bladder*, &c. taking all poſſible care, in all of them, to prevent the falling of any thing into the cavity of the *pelvis* or *abdomen*.*

* See two Memoirs by Monſ. *Simon*, upon the cæſarian operation, in the *Mem. de l'Acad. Roy. de Chirurg.* and doctor *Cyprianus's* letter to ſir *Thomas Millington*, M. D. upon the ſame ſubject.——Some years ago I examined the body of a woman, who had an *extrauterine fœtus* extracted by piece-meal at an abſceſs, opened in the *umbilical* region, long after the term of geſtation was expired. I found the parts that had ſuffered, perfectly healed, the woman enjoying a good ſtate of health, but ſhe had never ſince been pregnant. I received a very exact and circumſtantial account of this caſe from the woman, and the ſurgeon who cured her.——*Albucaſis*, *Alexander Benedictus*, *Hildanus*, and other writers, have recorded hiſtories of caſes to this purpoſe.——Some time after theſe papers were printed, Mr. *Garneys*, a reputable ſurgeon at *Yoxford*, in *Suffolk*, aſſured me, of his own certain knowledge, that the above-mentioned woman became pregnant ſome years after I ſaw and examined her, and brought forth an healthy child at the completion of the uſual term, without any more difficulty than ordinary,

Wounds of the *vagina uteri* are not very dangerous; they are commonly attended with pain in the groins, *pubes*, and *ſacral* region. ——I have three times found large ſtones lying in ſuch a favourable poſition to be cut upon through the *vagina uteri* and neck of the *bladder*, as to encourage me to proceed in that manner, preferable to any other; and which gave the patients very little pain, either in making the wounds, or extraction of the ſtones. They were both cured in three weeks, with the happy conſequence of retaining their urine perfectly well.*

Should

nary, but died in child-bed.——Alſo ſee a caſe to this purpoſe in the *London Med. Obſervations and Inquiries*, vol. ii. pag. 369.

* A ſurgeon of the higheſt character told me, he once was concerned in a caſe, where the whole *vagina* ſeparated in a mortification, as far as the *os tincæ*, the patient recovering beyond expectation.

Paulus, *Ætius*, *Benivenius*, *&c.* ſpeak of women who ſurvived the loſs of the *uterus* itſelf.

See in Vol. II. the caſe of a dangerous *hæmorrhage*, proceeding from a fungous excreſcence upon one of the *nymphæ*.——Concerning exuberance of theſe parts, conſult *Heiſter* and *Mauriceau*; and an account of an incipient mortification there, in *Solingen*, *de Morb. mulierum*,

Should the *rectum* be wounded, and the *bladder* at the ſame time, it may prove very difficult to cure ſuch a wound, on account of the urine falling continually upon it; as we ſee, when that accident happens in *lithotomy:* but when the *rectum* only is injured, and the wound can be eaſily come at, it readily admits of cure, as we obſerve after the operation for the *fiſtula* in *ano*; in which caſe, when *ſinuſes* extend too high, to be opened with ſafety, balſamic injection, &c. may be uſed to advantage.

Three or four years ago, I was conſulted, in the caſe of a woman upwards of thirty years of age, whoſe health was much impaired, by the long continuance of a very bad *fiſtula* in *ano*. Her ſurgeon had opened many *ſinuſes*, in different directions, and treated the caſe judiciouſly; but one remaining pretty high up the *rectum*, tending directly towards the *vagina uteri*, and diſcharging an ill-conditioned matter immoderately, which he durſt not venture to open, perplexed him very much; on which account he deſired me to viſit her with him. By introducing my finger into the *vagina*, and the probe into this

this *ſinus*, I found it terminated juſt above the *carunculæ myrtiformes*: I propoſed drawing a *ſeton* through the *rectum* into the *vagina*, which was agreed to, and the operation eaſily performed, with an inſtrument a little more curved than a tonſil-needle, having an eye towards the point. It ſucceeded ſo happily, that the diſcharge was obtained, at this depending opening in the *vagina*, with little or no inconvenience; and after continuing the *ſeton* about three weeks, it was left out, and the cure completed without any farther trouble. She ventured to marry ſoon after, and brought forth a healthy child in leſs than a year; ſince which ſhe remains perfectly well.*

The compoſition of the *ſcrotum*, is chiefly looſe ſkin, and *cellular* membrane without fat, which may be eaſily inflated with air; and is a ſoft bed for the tender *teſticles* to be repoſed in.——Wounds in this part require no peculiar management, and in general heal kindly. A bag truſs is the proper bandage, affixed

* This caſe, with ſomething more upon the ſubject, is inſerted in Vol. II.

affixed to a waiſtband, to receive and ſupport the part.——In *anaſarcous* dropſies, the *cellular* membrane here is ſometimes exceſſively loaded with water, diſtending the part to an enormous ſize; under which circumſtances, I have made ſcarifications ſeveral times with advantage, and without any bad accidents enſuing.

The *teſtes* are originally ſituated in the *abdomen*, juſt beneath the *kidnies*, and gradually deſcend, near the time of birth, through the ſheath of the *ſpermatic* cord into the *ſcrotum*, each carrying along with it a *peritonæal* coat, making the *tunicæ vaginales*.——This anatomical diſcovery of doctor *Hunter's*, explains the nature of the *hernia congenita*, or that ſpecies of rupture, where the *inteſtine* and *teſticle* are found in contact; which before could not be accounted for, only upon a ſuppoſition of there being, at the ſame time, a laceration of the *peritonæum*.*

The

* This diſcovery was made by doctor *Hunter*, in the year 1755, aſſiſted by the diligent inveſtigation of his brother, Mr. *John Hunter*, a very accurate and indefatigable anatomiſt, and an excellent ſurgeon; and it was demonſtrated

The *ſpermatic* cord is compoſed of an artery, vein, nerve, lymphatics, *vas deferens*, the cremaſter muſcle, and aponeurotic membrane, derived from the opening of the *muſ. obliq. extern.* They are connected by *cellular* membrane; which alſo makes the ſheath of the cord, and through that the *inteſtine* deſcends, before the veſſels, in a rupture.*

The figure of the *teſtes* is of a flattiſh oval; they are ſoft and glandular, and tubular with great tortuoſity, and are appointed to ſecrete and elaborate the *ſemen*; they are left very looſe and moveable in the *ſcrotum*, by which means, they are much leſs liable to external injuries.——The *epididymides* are vaſcular bodies, attached to the poſterior parts of the *teſtes*, in which the ſeminal *ducts* unite, forming the *vaſa deferentia*; which convey the *ſemen*, prepared by the *teſtes*, to its reſervoirs, the *veſiculæ ſeminales*, lying upon the inferior

demonſtrated by the doctor, in his lectures, that year.—See Mr. *John Hunter's* obſervation on the ſtate of the *teſtes* in a *fœtus*, and on the *hernia congenita*, in doctor *Hunter's* Medical Commentaries.

* See an extraordinary caſe of a *circocele* requiring caſtration, in Vol. II.

inferior part of the *bladder*, beyond the *proſtate gland*. Should theſe bodies, or their *ducts*, happen to be injured in *lithotomy*, the patient may be injured for the office of procreation.

According to the nature, texture, and ſenſibility of the *teſtes*, and their appendages, the *epididymides*, wounds in them are to be treated with great care and gentleneſs, obſerving general rules; and ſhould the *ſpermatic* cord be wounded, no particular management is required; but in wounds of the *teſticles*, &c. the *ſcrotum* muſt always be ſupported with a bag-truſs; which ſhould not be omitted when only the cord is injured.

When the radical cure of the *hydrops tunicæ vaginalis* is attempted, from what I have obſerved in patients of my own, as well as of others, I am fully convinced, that the beſt method is, to take out an oval piece by inciſion. And, in caſtration, from a great many examples, and ſtrict attention, I have not the leaſt doubt upon my mind, concerning the propriety of taking up only the

the *ſpermatic* artery, in order to obviate ſevere ſymptoms; which I have ſeen ariſe, beyond diſpute, in conſequence of tying the whole cord. Concerning both theſe operations, I have ſaid ſomething more in another place, founded upon inconteſtible evidence.*

The teguments of the *penis* are a looſe ſkin, and *cellular* membrane without fat, like that of the *ſcrotum*, which may alſo be inflated to a great degree by blowing air into it; and there is a reduplication, forming a kind of hood to the *glans penis*, called the *prepuce*. The body of the *penis* is made up of two *corpora cavernoſa*, the *corpus ſpongioſum urethræ*, and two pair of muſcles, called the *erectores penis* and *acceleratores urinæ*. The *corpora cavernoſa* ariſe diſtinctly from the *oſſa pub.* and *iſch.* and at their origin, are called *crura penis*, and will admit of inflation. The *corpus ſpongioſum* ſwells out at its beginning, making what is called the bulb of the *urethra*, and at its termination, it makes the *glans penis*; along this body runs the

* See Vol. II.

the *urethra*, which is alſo of a ſpongy texture, vaſcular and glandular. The inſide of this canal is lined with a delicate membrane, pierced in many places, through its whole extent, by the excretory *ducts* of *glands* called *lacunæ*; by which means it is conſtantly ſupplied and imbued with a viſcid fluid, or *mucus*, to defend it from the acrimony of the urine; and there are *lymphatics*, running from hence to the *veſiculæ ſeminales*, which have lately been filled with quickſilver by Mr. *Watſon*, an ingenious anatomiſt in *London*. The firſt pair of muſcles ariſe from the tuberoſities of the *oſſa iſch.* run in the direction of the *crura penis*, and are loſt upon the *aponeurotic* ſheath of the *corpora cavernoſa*. The ſecond ariſe between the *crura penis* and ſoon join, making a tendinous ring round the *urethra*; from thence they proceed to the *ſphincter ani*, and are loſt in that muſcle. On the back of the *penis*, between the *corpora cavernoſa*, runs the *vena magna*, ſo called by modern anatomiſts; and into each of theſe bodies enter an artery, vein, and nerve, diſtributing their branches.

When

When we duly conſider the nature, ſtructure, and combination of the parts, compoſing the *penis*, it muſt evidently appear, that deep wounds in it demand more attention than ordinary, though the general rules are to be obſerved in the treatment of them.*

When a ſtone is lodged in the *urethra*, and it is found neceſſary to cut upon it in order to extract it, the general method directed is, to make the wound laterally into that canal, firſt drawing up the ſkin, &c. of the *penis*, enough to be ſlipped down and cover over the other part of the wound, with a view of expediting the cure, and preventing a *fiſtula* in conſequence of the operation; but this method ſeems more likely to cauſe, than obviate, inconveniences; as the urine may then be diffuſed in the *cellular* membrane, occaſioning inflammation, &c. and bring on the very evil, we are ſtudying to avoid: therefore it appears more eligible, to endeavour to make the wound in the ſkin and *cellular* membrane correſpond with that in the *urethra*; keeping the lips of it together, with a ſtrip of

* Vid. *Tractatum Regneri De Graaf, de Virorum Organis Generationi inſervientibus.*

of common plaſter, having a ſlit in the middle to be uſed as the uniting bandage, after applying to the wound, a very thin, even pledget of ſome vulnerary balſam, as directed in inciſed wounds. This method I have practiſed much to my ſatisfaction.

I have divided the *prepuce* ſeveral times in *phimoſes*, without any ill accidents ſupervening; but I have been informed, by two eminent practitioners, who were eye-witneſſes, of mortifications happening in conſequence of this ſeeming ſlight operation, in patients of cachectic habits; which diſaſtrous events ſhould admoniſh us to act with precaution.

Previous to operations in ſurgery, it is certainly a matter of the utmoſt importance, to rectify what is amiſs in the patient's health and conſtitution, as far as poſſible: an inattention to theſe things, I am perſuaded, has frequently prevented ſucceſs attending operations, that have been well performed; after which, the greateſt degree of circumſpection is alſo demanded, and ſometimes found abſolutely neceſſary, to obtain the propoſed end and deſign of them; and indeed this obſervance cannot be too earneſtly inculcated.

OF WOUNDS OF THE EXTREMITIES.

HAVING gone through the treatment of wounds of the three cavities, &c. and, in the general hiſtory of them, conſidered thoſe of the teguments, muſcles, tendons, arteries, veins, lymphatics, nerves, &c. little is left to be ſaid concerning wounds of the extremities, but to recommend a good anatomical knowledge of the ſtructure, mechaniſm, and uſe of theſe parts; which, joined to the general rules laid down for the management of ſuch accidents, will prove a ſufficient direction, what meaſures to take, in the various kinds of them, however complicated.

We muſt always remember, as has before been remarked, that whenever a muſcle or tendon is divided, totally or partially, it is of great conſequence, to place the limb in a favourable poſition to relax it, that the undivided part may not be put upon the ſtretch, or the ends drawn more aſunder, which require to be kept, as near together as poſſible, when they cannot be kept quite in contact:

and

and ſhould the ſuture be practiſed in either of theſe caſes, it is neceſſary to give rather more attention to this circumſtance. Here I may juſt repeat the proper poſture to put the limb in, when the *tendo achillis* is wounded; which is effected by bending the knee and extending the foot, to ſuch a degree as leaves the part moſt at eaſe.

The moſt formidable wounds of the limbs, are thoſe accompanied with fractures of the bones; to which part of ſurgery I have ſpoken ſufficiently, in a little work I printed a few years ago, now reprinted with additions, and ſee no manner of reaſon to alter my ſentiments, the ſame ſucceſs ſtill attending the ſame method.

All kinds of wounds of the joints require the gentleſt and mildeſt treatment and applications, with the utmoſt care and attention to prevent pain, inflammation, and fever, according to the rules we have had occaſion to mention repeatedly, in the courſe of this treatiſe: and probably the wrapping the whole part up at firſt, in a warm, emollient cataplaſm, renewing it as often as it grows cold, might prove the happy means

of obviating bad accidents, in theſe threatening caſes.

In a wound of a lower extremity, it is adviſable to confine the patient to his bed; and when in the joint, that injunction muſt be peremptorily inſiſted upon, keeping the limb as much at reſt, as in a luxation or fracture, in order to have the main intentions of cure more effectually anſwered: however, as ſoon as the part will bear gentle motion frequently, that will be requiſite, as a means of preventing an immobility of the joint.

Wounds of the joints, made either by puncture or inciſion, are of a very dangerous nature, as they are ſurrounded with tendinous and membranous parts; which though not very ſenſible in a ſound ſtate, as we have obſerved; yet when inflamed, they become exquiſitely ſenſible, often attended with vehement pain and fever, and ſometimes with delirious ſymptoms.* The danger is ſtill increaſed, when the wound penetrates the *capſular* ligument; a caſe which may be diſcovered by the probe, and generally by a diſcharge of the *ſynovia*, ſecreted by glands in

* See doctor *Hunter's* Commentaries, part i. pag. 69.

in the joint, to facilitate its motion; but as a diſcharge of a ſimilar kind may deceive our judgment, proceeding from wounds in the *ſacculi mucoſi*, which lie under the tendons of ſome long muſcles that play upon bones near, or over joints, furniſhing them with ſuch a lubricating fluid, to prevent the ill effects of friction, we ſhould be acquainted with the ſituation of theſe little membranous bags, that we may not immediately conclude the wound penetrates the joint, from the appearance of the fluid diſcharged, without farther conſideration. Wounds, that enter the joints, muſt be looked upon as much more dangerous than thoſe in which only theſe *ſacculi* or *burſæ* are opened, and they will generally afford a larger ſynovial diſcharge.

When an atrophy follows a wound in a limb, with or without rigidity of the joint, nothing carries ſo much probability of giving relief as pumping at *Bath*; but, as a ſubſtitute, warm water may be poured upon it at at home, in imitation of that; uſing good friction with a fleſh bruſh to the waſted, and emollient embrocations to the rigid parts, giving them gentle motions as early as they

will admit of being moved, without creating much pain, as has been adviſed. The water for this purpoſe may eaſily be impregnated with warm plants, &c. giving it, in ſome degree, the virtues of the natural baths.*

I have inſerted the following liſt of the *ſacculi mucoſi*; it appearing of ſome conſequence, to diſtinguiſh whether the wound penetrates the joint, or only a *ſacculus* is opened; which conſideration I do not find has been paid any regard to, in reſpect to wounds contiguous to the joints, by any writer in ſurgery.†

A List

* In reſpect to wounds of the extremities and articulations, we may conſult *Glandorpius*, *Wiſeman*, *Paré*, *Foreſtus*, *Dodonæus*, *Placentinus*, *&c.* and *Hildanus's* diſſertation, *de Ichore*, among his other works, is well worth reading on this occaſion.

† Our great maſter in anatomy, doctor *Hunter*, calls theſe little, fine membranous bags, *ſacculi mucoſi*, and the celebrated *Albinus*, *burſæ mucoſæ*, in his *Hiſtoria Muſculorum*.——It is ſaid that *Bellini* firſt obſerved them.

A LIST of the *Sacculi mucoſi*, with their ſituation and connection. They may be made very conſpicuous by inflation.

1	*Deltoides.*	A large one ſituated under this muſcle upon the *acromion ſcapulæ.*
2	*Biceps Brachii.*	A ſmall one, inveſting the tubercle of the *radius*, both on the ſide where the tendon is fixed, and alſo on the other ſide, where there is no tendon; it adheres ſtrongly to the whole tubercle, and looſely to part of the *ſupinator brevis*, under which it lies, as well as under the tendon of the *biceps.*
3	*Iliacus internus* and *Pſoas.*	A large thin and pliable one is found upon the *iſchium*, beneath the tendons of the *iliacus internus* and *pſoas*, as they paſs down to their inſertions in the *os femoris*; it is attached to theſe tendons, and to the anterior ſurface of the *capſular* ligament; and this *ſacculus* ſometimes communicates with the joint, as I have obſerved.
4	*Latiſſimus Dorſi* and *Teres Major.*	One is ſituated between the extremities of the tendons of theſe muſcles, adhering ſtrongly to them.
5	*Gluteus max.*	A large thin one, firmly connected by a ſmall part of it to the back of the *trochanter*, immediately under the termination of the *gluteus medius*, and is looſely attached to the reſt of the *trochanter* and the tendon of the *gluteus maximus.*

6	*Gluteus medius.*	A ſmall one, ſituated between the termination of its tendon, and that of the *pyriformis*, adhering to both.
7	*Gluteus minim.*	A ſmall thin one, attached to its tendon and the *trochanter major*.
8	*Gemini.*	A ſmall one between them and the termination of the *obturator internus*, connected to both, and to that part of the *capſula* of the joint, which lies under the *gemini*.
9	*Biceps Cruris.*	One is ſituated between the end of its tendon exteriorly, and the *capſular* ligament of the knee adhering to both.
10	*Semimembranoſus.*	A ſmall one lies between its tendon, which runs between the inner condyle of the *tibia*, and the *capſular* ligament of the joint.
11	*Cruralis & Vaſti.*	Behind the tendons of the *cruralis* and *vaſti*, there is a thin but large one, connected to thoſe tendons before they join; and after their junction, it is fixed to the *patella*; it alſo adheres to the *capſula* of the joint, that expands itſelf over the bone.
12	*Gracilis, Sartorius, & Semitendinoſus.*	Under the extremities of the tendons of theſe muſcles is a large one, adhering to them on one ſide, and on the other to the *capſular* ligament of the knee, on the inſide where theſe tendons play.
13	*Gemellus.*	A large one lies under its inner head, firmly attached to its tendinous origin, alſo to the extremity of the *ſemitendinoſus* and the *capſula* of the knee near the anterior condyle.

Soleus.

14	*Soleus.*	The tendon of the *ſoleus* paſſes over the upper part of the *os calcis*, between which and the bone, lies a large *ſaculus*; and near that is found a glandular body, which furniſhes a mucous fluid for the more effectual lubrication of theſe parts, that are in ſuch conſtant motion in walking.
15	*Tibialis anticus.*	A ſmall one is fixed to the tendon a little before its termination, where it plays on the top of the foot.
16	*Peroneus longus.*	One lies under the tendon of this muſcle, where it plays over the *os cuneiforme* on the outſide of the foot.

Many years ago, before I had any knowledge of theſe *ſacculi*, I was called to a young man, who had received a wound, with the bill of a wood-hook, on the inſide of his knee, juſt above the joint, whence proceeded a ſynovial diſcharge, which made me then apprehend it penetrated the *burſal* ligament; but the wound healing kindly, by the common treatment, without ill accidents ſupervening, I have ſince been inclined to think, upon reflection, that the weapon only penetrated one of theſe *ſacculi*, and not the joint.*

OF

* Probably in theſe *ſacculi* diſorders may be ſeated deſerving future conſideration.

OF GUN-SHOT WOUNDS.

SURGEONS of the greateſt abilities and experience having amply treated this ſubject, I ſhall be very brief upon it.

Gun-ſhot wounds are the moſt complicated, and to be conſidered as the worſt ſort of contuſed and lacerated wounds. Should the external openings be ſmall, they require immediate enlargement; which, beſides anſwering other good purpoſes, gives room to extract extraneous bodies, as we have directed in the general treatment of wounds: and after the extraction of a ball or other ſolid body, we ought to be particularly careful in our ſearch, leſt any part of the garments, that may have been carried in with it, ſhould be left behind, which would infallibly obſtruct the cure, and probably produce worſe ſymptoms, than even the ball itſelf: and, above all things, we ſhould endeavour to obtain free and depending openings. The management of theſe wounds differs in nothing material from that which

is

is proper, and has been adviſed, in other contuſed and lacerated wounds, obſerving the ſame rules; only, as the digeſtion of the wound advances, and the contuſed and lacerated parts, that have loſt their vitality, by the force of the ball, ſeparate, (which is called the fall of the *eſchar*, a term early introduced, upon a ſuppoſition of that ſlough being cauſed by burning) there is danger of an *hæmorrhage*, for obvious reaſons, which is a matter of ſuch importance as demands particular attention; and therefore, when ſuch a wound happens in a limb, the leaving a tourniquet ligature looſe about it, with directions to an attendant to uſe it occaſionally, till the ſurgeon can be called, is a precaution that may prove the means of ſaving the patient's life.——The applications ſhould be of the moſt lenient kind at firſt; and nothing, in all probability, would contribute ſo much to prevent bad conſequences, when the limbs are thus wounded, as wrapping them up as ſoon as poſſible in a ſoft, emollient poultice, prepared with bread and milk, and having a good portion of oil in it, applying it moderately warm, to excite a pleaſing

a pleaſing, not a painful ſenſation, renewing it as often as it grows cold: and, from a little experience I have had in theſe accidents, I think, the balſam mentioned in pag. 139, is very ſuitable to dreſs the wounds with.——Bleeding, laxatives, and an exact regimen, are to be ſtrictly obſerved. The patient's conſtitution, ſtate of health before the accident, his cuſtomary way of living, the climate, and ſeaſon of the year, are to be conſidered; and all the non-naturals duly regulated, as we have already mentioned, concerning the general treatment of wounds, in the firſt part of this treatiſe. But it too frequently happens in gun-ſhot wounds of the limbs, and more eſpecially when in the joints, that there is no reſource, but ſpeedy amputation, to preſerve the patient's life, before inflammation, fever, and a train of bad ſymptoms ſupervene. The method then of performing that dreadful operation, and the manner of dreſſing after it, which I have adviſed in remarks publiſhed ſome years ago, I cannot now help ſtrongly recommending and inculcating, from the conſtant ſucceſs which has attended it in my

my own practice, in a great number of inſtances: eſpecially too as other ſurgeons, who have followed the ſame method, upon my recommendation, have given me the ſatisfaction of their full approbation of it.* Though the firſt dreſſings, after amputation, ſhould not be removed, till they are ready of themſelves to fall off; yet, if the gleet proves offenſive, ſuch part of them, as can be eaſily taken away, ſhould by all means be removed, and clean proper dreſſings, ſo far, applied to the ſtump; in order to prevent that inconvenience, or the matter, which may have acquired a degree of acrimony, from excoriating the ſkin, &c.

In

* See Vol. II.——In many amputations which I have been concerned in within a few years; I have uſed a pair of diſſecting *forceps*, to take hold of the edges of the conſiderable arteries, that could eaſily be come at, drawing them out a little way, juſt to give an opportunity of paſſing the needle, ſo as to include only a ſmall portion of *cellular* membrane in the ligature with the veſſel, in order to prevent its ſlipping off.——See more to this purpoſe in Vol. III.

In large contuſed and lacerated wounds, whether made by gun-ſhot or otherwiſe, after bleeding repeated as the urgency of the ſymptoms require, and the nature and ſtrength of the patient's conſtitution will allow, with a due obſervance of the other neceſſary rules which have been mentioned, the *bark*, if nothing contraindicates its uſe, may prove very beneficial; particularly when there is a tendency to mortification, in a patient whoſe ſolids are lax: under which circumſtance, it is moſt likely to prove efficacious, for ſelf-evident reaſons.——Should it be thought proper to adminiſter a cordial remedy, at the ſame time with the *bark*, perhaps nothing can equal that which has *camphire* in its compoſition; and larger doſes of this very active drug, than are commonly given, may ſafely be ventured upon, on ſome occaſions.——The *bark* has alſo a ſingular property in meliorating the ſuppuration, as well as in ſtopping a mortification, as experience has evinced, within a few years; and it has been preſcribed, to anſwer that very intention, by the moſt eminent practitioners:

indeed,

indeed, it may reaſonably be conceived to ſerve both purpoſes, upon the ſame ſuppoſed *modus operandi*.——It is often found of great advantage, to join *rhubarb* in ſmall quantities with the *bark*; which rational practice was firſt introduced upon doctor *Mead's* authority, in order to prevent the inconveniences ariſing from coſtiveneſs in the uſe of it; a falſe notion prevailing before, that if it had not that effect, it would not anſwer the propoſed end.*

The method which Mr. ſerjeant *Ranby* has urged, with reſpect to the management of gun-ſhot wounds, in his treatiſe written after attending his late majeſty in his *German* expedition, being founded upon rational principles, and ſupported by great experience, deſerves to have all due regard paid to it.—— *Wiſeman*, *Heiſter*, and *Le Dran*, and many diſſertations in the 2d vol. of the *Mem. de l'Acad. Roy. de Chirurgie*, are well worth reading on this ſubject.——Monſ. *Deſport's* treatiſe, upon this kind of wounds, bears a great

* Mr. *Ruſhworth*, an eminent ſurgeon at *Northampton*, I think, was the firſt who wrote profeſſedly upon the uſe of the *bark* in mortifications.

great character in the hiſtory of the *Royal Academy of Surgery* at *Paris*, prefixed to the 3d vol. of the *Memoirs* of that reſpectable body; where it is alſo mentioned, that Monſ. *Louis* was about writing upon the ſame ſubject.——There is alſo an excellent diſſertation upon gun-ſhot wounds, by Monſ. *Le Cat*, an eminent ſurgeon at *Rouen*, in the 1ſt vol. of the prize *Memoirs* of this ſociety.*

OF

* *Ambroiſe Paré* was a great reformer of ſurgery; he dreſſed gun-ſhot wounds more gently than any of his predeceſſors, whoſe applications were too ſevere and painful, having erroneous notions of the nature of ſuch wounds, from their appearances.——Monſ. *Martiniere* and *Vacher*, in their *Memoires ſur les playes d'armes à feu*, animadvert upon *Bilguer's Diſſertatio medico-chirurgica, de inutilitate amputationis membrorum. Mem. de l'Acad. Roy. de Chirurgie*, tom. 4.

OF BURNS.

BURNS are of various kinds, proceeding from fire itſelf, or from other matter, fluid or ſolid, that is heated, melted, or fuſed by fire, producing the ſame effect.

When the burn, or ſcald (ſo termed if the effect proceeds from any hot liquor) is ſuperficial, only raiſing the *cuticle* in veſications, the frequent uſe of *ol. lini*, or *ol. olivar.* applied warm with a feather, and a plaſter of the *cerate* mentioned in p. 202, or ſome ſuch mild application over it, will generally be found ſufficient to anſwer the purpoſe; but when it penetrates deep, deſtroying the vitality of the vaſcular compages, and inducing an *eſchar*, then digeſtives are adviſable, to aſſiſt nature in the ſeparation of it; after which, the wound requires great care in the healing, by the common rules, in order to prevent deformity of the *cicatrix*, to which it is much more liable than other wounds. Should the fingers be burnt, plaſters muſt be applied in ſuch a manner as may hinder their coali-

tion, which inconvenience will follow, if they are ſuffered to be in contact; ſome ſuch inſtances I have ſeen, through this inadvertence, which proved difficult to remedy. In ſome caſes, the hand-machine, deſcribed in the ſecond volume of this work, may prove of conſiderable uſe, to give an opportunity of preſerving the flexion and extenſion of theſe parts; for want of which machine, a piece of ſtiff paper may be formed, and adapted to the ſame purpoſe, with proper padding and bandage; which attention ſhould not be looked upon as trivial, conſidering the extenſive uſefulneſs of the fingers.

In caſe much pain and inflammation ſhould attend theſe accidents, veneſection, gentle purging, &c. with ſoft emollient cataplaſms, of bread, milk, and oil, and ſuch applications, as directed in other wounds, muſt be uſed; and ſhould the pain become very ſevere, *opiates* muſt be given to aſſuage it.*

THE

* See an extraordinary caſe, in Vol. II. of a burn by a fiery meteor.

THE METHOD OF OPENING A DEAD BODY.

SURGEONS are often called on this occaſion, in order to inveſtigate the cauſe and ſeat of diſeaſes and death, either by the relations of the deceaſed, or the magiſtrates of juſtice, to whom report is to be made; therefore at the time of performing this operation, minutes ſhould be taken of what is obſerved. Dexterity and neatneſs, in the performance of it, are of conſequence to the ſurgeon; as the eyes of ſpectators are upon him, making their remarks.

The inſtruments, and all things neceſſary, ſhould be diſpoſed in order, as for any other operation; as knives, a razor, a great and ſmall ſaw, ſciſſars ſtrait and curved, elevators, needles threaded, ſponges, tow, ſaw-duſt or bran, baſons with water, towels, and receivers for the *viſcera*, when they are to be taken out of their cavities; and ſhould the

body have undergone any degree of putrefaction making it offenſive, it will be right to have a mixture of lavender-water and vinegar, or ſome ſuch thing, to ſprinkle it with, &c.

The body is to be laid upon a ſuitable table, advantageouſly placed for the light, having a cloth thrown over the parts which decency demands ſhould be concealed, eſpecially in females.

When it is intended only to inſpect the *abdomen* and its contents, a longitudinal inciſion from the *xiphoid cartilage* to the *os pubis*, interſected by a tranſverſe one at the navel, will give a fair opportunity of anſwering theſe purpoſes, when the angles are reverſed.

Should it be required to examine all the three cavities, and the parts contained in them, we are to begin by opening the head, making an exciſion quite acroſs to the bone, from ear to ear; which ſection is preferable to the *crucial*, commonly made on this occaſion: then the ſcalp may be eaſily diſſected from the ſkull, and turned down over the face,

face, and towards the neck, giving room for the ſaw. The head muſt be held very ſteadily by an aſſiſtant, during the ſawing, which ſhould be begun on the middle of the *frontal*, proceeding to each *temporal* bone, and ſo to finiſh the circle upon the middle of the *occipital* bone, which may generally be done conveniently enough, by raiſing the head and inclining it forward, after having proceeded as far as this bone; or the body may then be turned prone, ſhould that poſture be found more convenient, to complete the circle. The cap of ſkull is then to be raiſed with the elevator, occaſionally cutting the *dura matral* adheſions: after this the *encephalon* is to be removed, carefully ſeparating the other attachments of the *dura mater*.

In order to bring the *thorax* and *abdomen*, with the parts contained in theſe cavities, under one view, an inciſion is to be made on each ſide the *ſternum*, in the courſe of the *cartilages* of the ribs, which are annexed to it; diſſecting from thence the muſcles with the teguments, the ſpace of two or three inches toward the *ſpine*; then cutting through

the *cartilages*, which will be ſeen, and eaſily divided with a knife a little curved near the point: then the inciſions are to be continued from the *ſternum*, through the *abdominal* cavity, in an oblique direction, to each *ileon* or *inguen*; after which the *clavicles* are to be ſeparated from the *ſternum*, or this bone divided at its ſuperior cartilaginous junction, with a ſtrong knife, diſſecting it from the *mediaſtinum*, and turning it downwards with the muſcles, &c. of the *abdomen*. This is the moſt eligible manner of opening theſe cavities, and gives an opportunity of ſewing them up, with a better appearance for any perſon's view afterwards. That kind of ſtitch, called by ſempſtreſſes fine-drawing, or a flat ſeam, as here repreſented, though not mentioned by chirurgical writers, has a very pretty and neat effect upon theſe occaſions.

If it is propoſed to take out the *thoracic* and *abdominal viſcera* together, for farther examination, the *diaphragm* is firſt to be cut down to the *ſpine* on both ſides; then, to avoid being incommoded with blood, &c.

two

two very ſtrong ligatures are to be paſſed round the *æſophagus* and large blood-veſſels, in which the *trachea* may be included; tying them ſtrait, and then dividing theſe parts between the ligatures: the ſame meaſures are to be taken in reſpect to the inferior veſſels, upon the *lumbar* region, a little above the bifurcation of the *aorta*, including the *vena cava*; and alſo upon the *rectum*. After having obſerved theſe precautions, the *viſcera*, with the *diaphragm*, are to be removed, by a wary diſſection, all the way cloſe to the *ſpine*; and gently drawing them, at the ſame time, will greatly facilitate the ſeparation.

When the *thoracic* and *abdominal viſcera* are to be taken out ſeparately, in the firſt caſe ligatures muſt be made as have been deſcribed upon the veſſels, &c. juſt above the *diaphragm*, and in the other juſt below it, and upon the *rectum*.

Should we be called upon to perform this office, when the body is become very putrid, it will be abſolutely neceſſary to have ſuch parts of it well waſhed with warm vinegar and brandy, and then ſprinkled with lavender-water, or ſome ſuch odoriferous, anti-

putreſcent liquor before the examination, in order to correct the ſtench, and defend us againſt the noxious quality of the effluvia; the neglect of which precaution may be attended with very direful effects, of which we have inſtances. I have lately been concerned on two occaſions, where it appeared abſolutely neceſſary to uſe ſuch means as might prevent the like conſequences.

OF

OF EMBALMING DEAD BODIES.

IN the early ages of the world, the practice of embalming dead bodies was very common, particularly among the *Egyptians*, as we have obſerved in the introduction; but it has long been diſuſed in almoſt all countries, except for great perſonages.

What I have principally to ſay on this head, which I thought might prove acceptable, was communicated to me ſome years ago, by a perſon of great character, and well acquainted with the modern practice of embalming in this kingdom.

After eviſceration, as has been directed in opening a dead body, and continuing the inciſion farther upwards, even into the mouth, and, if practicable, without cutting the ſkin of the neck, all the cavities are to be well cleanſed, and the humidity ſucked up with ſponges, then waſhed with *tinct. myrrhæ*, and filled with a *ſpecies*, compounded of fragrant herbs, aromatic drugs, and gums reduced to powder, not very fine, firſt reſtoring the heart

heart to its former reſidence, after having opened its ventricles, cleanſed and waſhed them with the tincture, ſtuffed them with the *ſpecies*, and ſewed them up; and then the cavities are to be ſtitched very cloſe with the glover's or ſpiral ſuture.——Large and deep inciſions are alſo to be made in all the moſt fleſhy parts, cleaning and waſhing them with the tincture in the ſame manner, filling them with the antiſeptic *ſpecies*, and ſtitching them up.——Then the head, trunk, and limbs, are to be perfectly well covered with cerecloth; putting a piece under the chin, to be ſecured by ſewing on the top of the head, after having well adjuſted the cap of the ſkull, ſewed the ſcalp together, and cleaned the mouth, as has been directed for the other parts, and putting in ſome of the *ſpecies*.——The cerecloth is to be prepared with a compoſition made of wax, roſin, ſtorax, and painter's drying oil, S. A.—— After the application of the cerecloth, with great care and exactneſs, cut into ſuitable pieces, according to the reſpective parts, and cloſing them well every where; the face, being cloſe ſhaved, is to be covered with

ſome

ſome of the above compoſition melted, and laid on with a bruſh of a proper degree of heat, and of a moderate thickneſs; which may have a faint fleſh-colour given it with vermillion, and when it is grown cold and ſtiff upon this part, it may be lightly ſtruck over with hard varniſh; or this varniſh, applied thick, may here ſerve the purpoſe alone.——A cap is to be well adapted to the head, falling down upon the neck, and to be ſewed under the chin, making a few circular turns about the neck with a roller of a fit breadth.——All the reſt of the corpſe is to be incloſed in a ſheet, to be artfully cut, and ſewed on very cloſe and ſmooth, with the fineſt tape, and ſuch a ſeam as is deſcribed in page 454; over which an appropriate dreſs is to be put, as the relations or friends think fit to direct and appoint, and then laid into the coffin, which ſhould be in readineſs: but when it is ſome great perſonage, who is to lie in ſtate for public view, before the funeral rites are ſolemnized, the dreſs muſt be appropriated to his dignity and character.—— The brain and other *viſcera* are to be put, with ſome of the *ſpecies*, into a leaden box.

——Some-

——Sometimes the heart, prepared as has been directed, to preſerve it from putrefaction, is depoſited in an urn by itſelf.*

* See *Paré*, and *Dionis* at the concluſion of his chirurgical operations, upon embalming.——Mr. *Greenhill*, a very learned ſurgeon, publiſhed in quarto, in the year 1705, the Art of Embalming, and the ſeveral ways of preſerving dead bodies, in moſt nations of the world, with their funeral rites and ceremonies.——Read the deſcription *du Cabinet du Roi ſur les Momies, par Monſ. Buffon*, tom. 3.——In *Sprat's* Hiſtory of our Royal Society, there is a remarkable account of the manner of embalming in the iſland of *Teneriffe*, communicated by a phyſician, who practiſed there twenty years.

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END OF THE FIRST VOLUME.